AGENDA
Rescheduled Meeting
Municipal Services Committee
December 12, 2012
6:30 P.M. – Council Chambers

1. **Call to Order & Roll Call**
2. **Establishment of Quorum**
3. **New Business**
   a. **Ordinance – 7205 Exner Road** – Petitioner seeks a variation to reduce the required rear yard setback from 30 to 35 feet to permit the construction of a sunroom addition
   b. **Ordinance – 326 Roger Road –** Petitioner seeks a variation to permit a 1,034 square foot detached accessory structure, a garage, where 800 square feet is the maximum permitted
   c. **Ordinance –** Proposed adoption of updated editions model building codes
   d. **Resolution –** Authorizing the Mayor to enter into an engineering agreement with Christopher B. Burke Engineering for pavement corings for the proposed 2013 Street Maintenance Program in an amount not to exceed $13,750.00
   e. **Resolution –** To enter into an agreement with Christopher B. Burke Engineering for the 2013 Street Maintenance program in an amount not to exceed $30,426.00
   f. **Discussion -** Budget Comparison to Actual Expenditures
   g. **Discussion** – Emerald Ash Borer Action Plan
   h. **Minutes -** October 22, 2012 – Municipal Services Committee
4. **Director's Report**
   a. Tara Hill Subdivision Wetlands Controlled Burn
   b. Crack Seal Program Cost Effectiveness and Benefits
   c. 2013 Ditch Catalogue
   d. 2013, 2014 & 2015 Road Catalogues

5. **Next scheduled meeting –** December 24, 2012 – Rescheduled – To Be Announced**.**

6. **Adjournment**

AGENDA MEMO
MUNICIPAL SERVICES COMMITTEE
MEETING DATE: December 12, 2012

Issue Statement

PZC 2012-14: **7205 Exner Road:** Petitioner seeks a variation to reduce the required rear yard setback from 30 feet to 25 feet to permit the construction of a sunroom addition.

Applicable Regulations: Zoning Ordinance, Section 5A-7-2-6: Yard Requirements, R-2 Single-Family Residence.
Zoning Ordinance, Section 5A-2-2-3: Variations.

General Information

Petitioner/
Property Owner: Jerome Barrett
7205 Exner Road
Darien, IL 60561

Property Location: 7205 Exner Road

PIN: 09-28-113-010

Existing Zoning: R-2 Single-Family Residence

Existing Land Use: Single-family home

Surrounding Zoning and Land Use:

North: R-2 Single-Family Residence – single-family homes
South: R-2 Single-Family Residence – single-family homes
East: R-2 Single-Family Residence – single-family homes
West: R-2 Single-Family Residence – single-family homes

Comprehensive Plan Update: Low Density Residential

History: None.

Property: 9,525 square feet

Floodplain: None.

Natural Features: None.

Transportation: Property has frontage on Exner Road.

Documents Submitted

This report is based on the following information submitted to the Community Development Department by the petitioner:

1. Plat of Survey, 1 sheet, prepared by ARS Surveying Services, LLC, dated June 5, 2007.

Planning Overview/ Discussion

The subject property is located on the east side of Exner Road, south of 71st Street.

The petitioner proposes to construct a sunroom addition onto the back of the home. The proposed addition is to be 25 feet from the rear lot line. The property is zoned R-2 Single-Family Residence, as such, a minimum 30-foot rear yard setback is required.

The proposed addition is 14 feet x 22 feet, extending 14 feet from the rear of the home.

The variation request must address the following criteria for approval:

1. Whether the general character of the property will be adversely altered.
2. Whether the overall value of the property will be improved and there will not be any potential adverse effects on the neighboring properties.
3. Whether the alleged need for the variation has been created by any person presently having a proprietary interest in the premises.
4. Whether the proposed variation will impair an adequate supply of light and air in adjacent property, substantially increase congestion in the public streets, increase the danger of fire or endanger the public safety.
5. Whether the proposed variation will adversely alter the essential character of the neighborhood.

Staff Findings/Recommendations

The proposed variation will not adversely alter the essential character of the property, nor will it adversely alter the essential character of the neighborhood, nor will it impair adequate light and air onto adjacent properties.

Therefore, staff recommends the Planning and Zoning Commission make the following recommendation granting the variation petition:

> **Based upon the submitted petition and the information presented, the request associated with PZC 2012-14 is in conformance with the standards of the Darien City Code and, therefore, I move the Planning and Zoning Commission recommend approval of the petition.**

Planning and Zoning Commission Review – December 5, 2012

The Planning and Zoning Commission considered this matter on December 5, 2012. The following members were present: Beverly Meyer – Chairperson, Ronald Kiefer, John Lind, Raymond Mielkus, Pauline Oberland, Kenneth Ritzert, Michael Griffith – Planner and Elizabeth Lahey – Secretary.

Members absent: Donald Hickok, Louis Mallers and Susan Vonder Heide.

Michael Griffith, Senior Planner, reviewed the staff agenda memo.

Jerome Barrett, the petitioner, was present and described the proposed 4-season room addition to the home. He stated the addition will be located approximately where their patio is currently located. He stated the exterior materials will coordinate with the home.

There was not anyone from the public to offer comments. Mr. Griffith stated that he received several phone calls concerning this and that once he explained the reason for the public hearing, those who had called did not have objections.

Commissioner Lind stated the depth of the addition is reasonable.

Commissioners Kiefer and Ritzert stated the request was reasonable and the proposed addition looks nice.

> **Without further discussion, Commissioner Kiefer made the following motion seconded by Commissioner Mielkus:**

Based upon the submitted petition and the information presented, the request associated with PZC 2012-14 is in conformance with the standards of the Darien City Code and, therefore, I move the Planning and Zoning Commission recommend approval of the petition.

Upon a roll call vote, THE MOTION CARRIED by a vote of 6-0
(Commissioners Hickok, Mallers and Vonder Heide were absent.)

Municipal Services Committee – December 12, 2012

Based on the Planning and Zoning Commission's recommendation, staff recommends the Committee make the following recommendation approving the variation petition:

Based upon the submitted petition and the information presented, the request associated with PZC 2012-14 is in conformance with the standards of the Darien City Code and, therefore, I move the Municipal Services Committee recommend approval of the petition.

Decision Mode

The Planning/Zoning Commission considered this item at its meeting on December 5, 2012.
The Municipal Services Committee will consider this item at its meeting on December 12, 2012.

ARS
SURVEYING SERVICES, LLC
1221 LAKEVIEW CT.
ROMEOVILLE, ILLINOIS 60446
PH:(630) 226-9200 FAX: (630) 226-9234

PLAT OF SURVEY

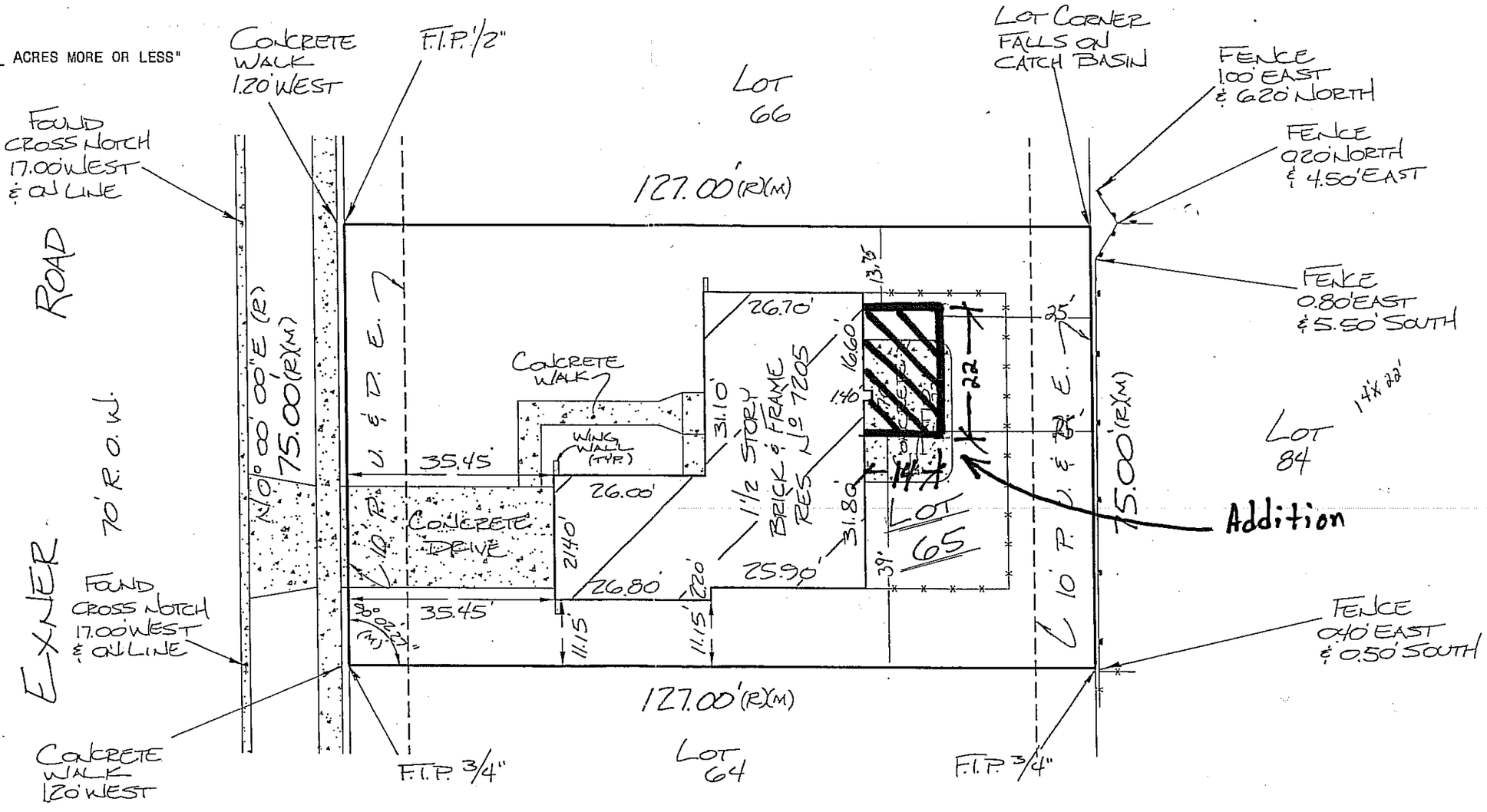
LOT NUMBER 65 IN GALLAGHER & HENRY'S BROOKHAVEN MANOR, UNIT NUMBER 7, A SUBDIVISION IN THE EAST 1/2 OF THE NORTHWEST 1/4 OF SECTION 28, TOWNSHIP 38 NORTH, RANGE 11 EAST OF THE THIRD PRINCIPAL MERIDIAN, IN THE CITY OF DARIEN, ACCORDING TO THE PLAT THEREOF RECORDED AUGUST 28, 1975 AS DOCUMENT NUMBER 1175-45343, IN THE RECORDER'S OFFICE OF DUPAGE COUNTY, ILLINOIS.

BASIS OF BEARING:
EAST LINE OF EXNER ROAD AS MONUMENTED AND OCCUPIED PER RECORDED SUBDIVISION PLAT. N00°00'00"E (R)

N / W / E / S

SCALE: 1"=20'

AREA OF SURVEY:
"CONTAINING 9,525 SQ. FT. 0.22 ACRES MORE OR LESS"



STATE OF ILLINOIS }SS
COUNTY OF WILL

I, THE UNDERSIGNED, AN ILLINOIS PROFESSIONAL LAND SURVEYOR, DO HEREBY CERTIFY THAT "THIS PROFESSIONAL SERVICE CONFORMS TO THE CURRENT ILLINOIS MINIMUM STANDARDS FOR A BOUNDARY SURVEY," AND THAT THE PLAT HEREON DRAWN IS A CORRECT REPRESENTATION OF SAID SURVEY.

DATED, THIS 5TH DAY OF JUNE, A.D., 2007, AT ROMEOVILLE, ILLINOIS.

Alan F. Deeringhaus

ILLINOIS PROFESSIONAL LAND SURVEYOR NO. 035-3087
LICENSE EXPIRATION DATE NOVEMBER 30, 2008

ILLINOIS BUSINESS REGISTRATION NO. 184-2961

CLIENT DELEGGE

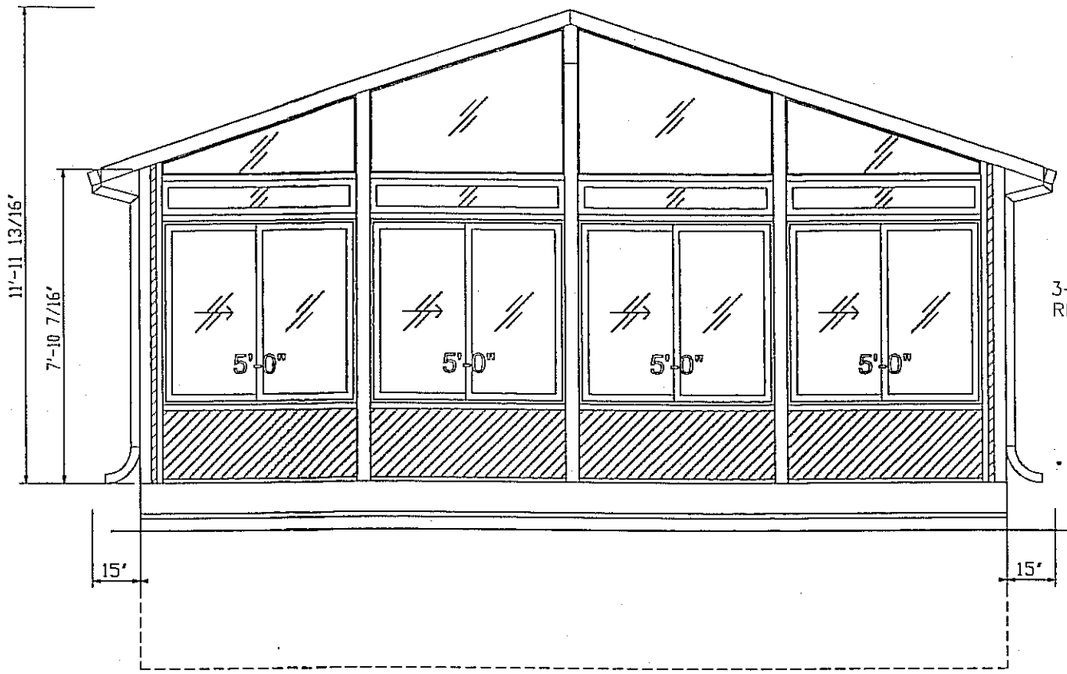
JOB NO. 90920-07

FIELDWORK DATE. 6-4-07

LEGEND

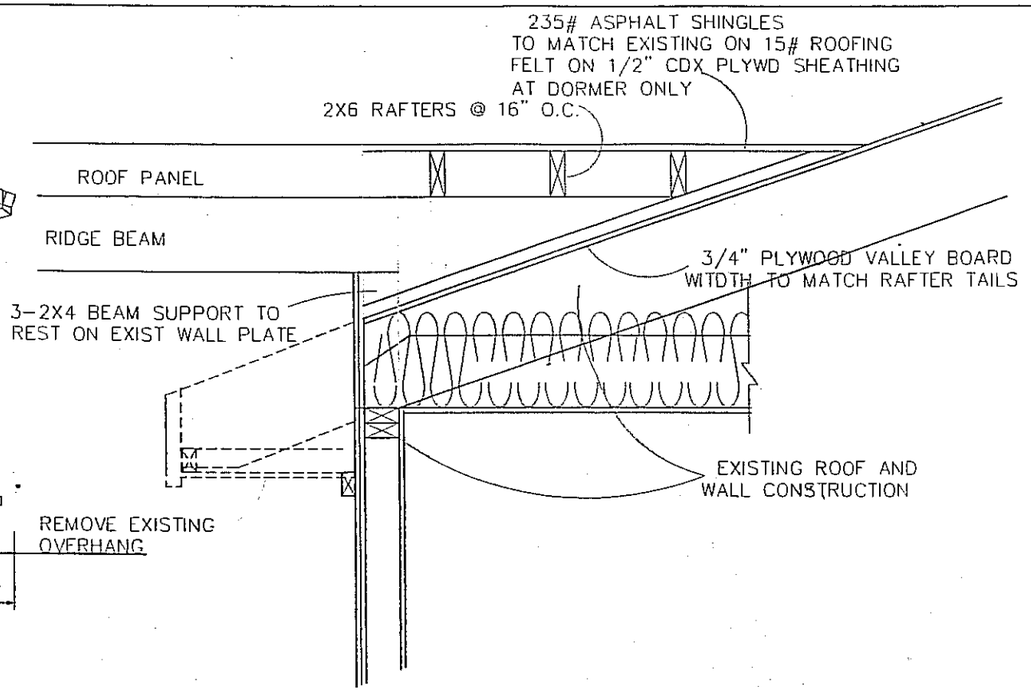
(R) = RECORD	(NW) = NORTHWESTERLY	= CHAIN LINK FENCE
(M) = MEASURED	(NE) = NORTHEASTERLY	= WIRE FENCE
(D) = DEED	(SW) = SOUTHWESTERLY	= WOOD FENCE
(C) = CALCULATED	(SE) = SOUTHEASTERLY	= SPLIT RAIL FENCE
(L) = ARC LENGTH	(RAD)= RADIUS	= WROUGHT IRON FENCE
(CH)= CHORD	(A) = ASSUMED	P.U. & D.E. = PUBLIC UTILITY & DRAINAGE EASEMENT
(R.O.W.) = RIGHT OF WAY	(F.I.P.) = FOUND IRON PIPE	
	(F.I.R.) = FOUND IRON ROD	B.S.L. = BUILDING SETBACK LINE

ALAN F. DEERINGHAUS ILLINOIS PROFESSIONAL LAND SURVEYOR 3087 ROMEOVILLE, ILLINOIS



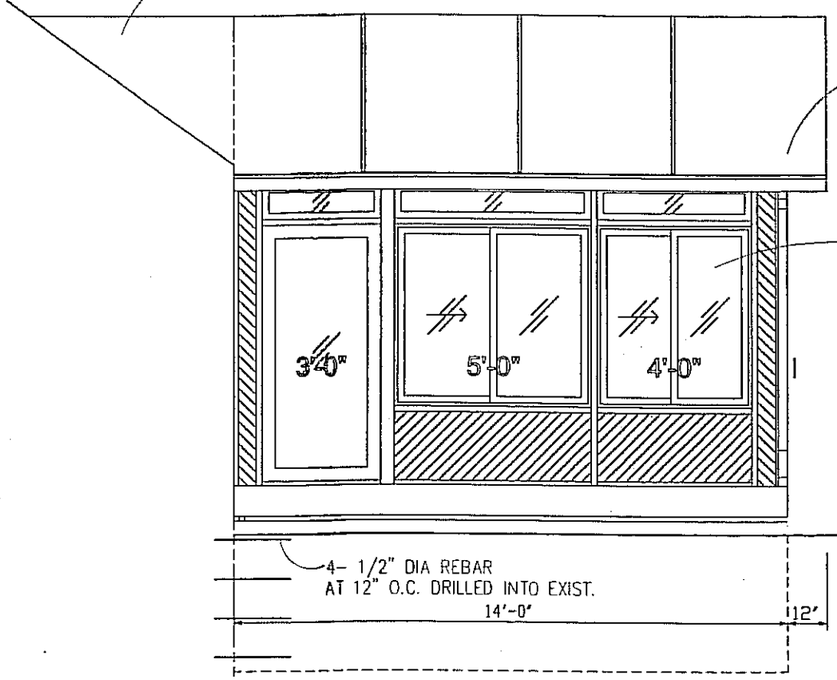
FRONT ELEVATION

SCALE: 1/4"=1'-0"



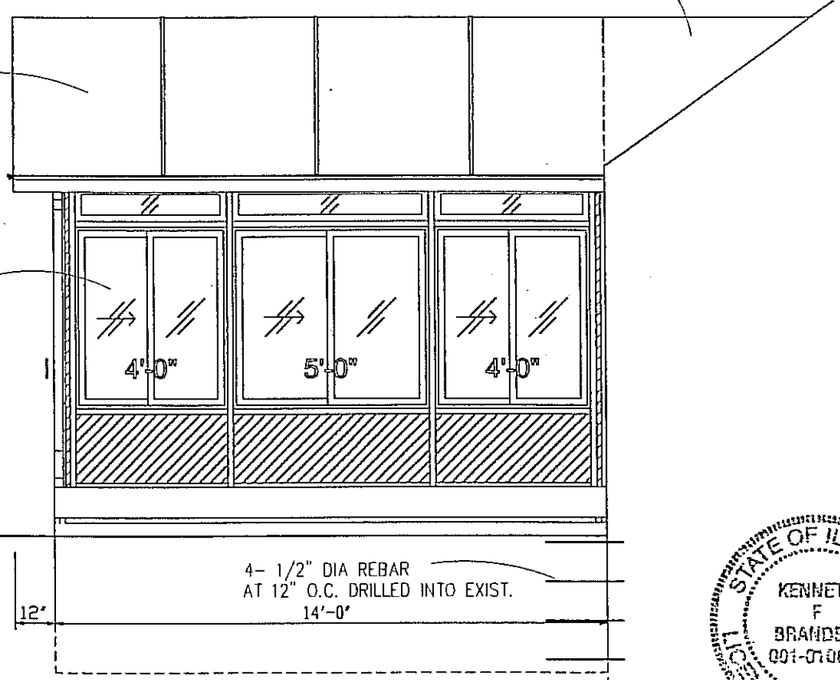
SADDLE DETAIL

SCALE: 3/4"=1'-0"



LEFT ELEVATION

SCALE: 1/4"=1'-0"



RIGHT ELEVATION

SCALE: 1/4"=1'-0"

BARRETT SUNROOM
7205 Exner rd.
Darien, Il. 60561

Job No.:

Sheet No.: A-2

NU-SASH
FOUR
SEASONS SUNROOMS
850 W STATION ST
KANKAKEE,IL 60901
(800) 892-1414

Drawn:

Date: 11-12-12

Scale:

JAKL-BRANDEIS ARCHITECTS LTD.
1800 HAWTHORNE LANE
WEST CHICAGO, IL 60185
(630) 562-3900

STATE OF ILLINOIS
KENNETH F BRANDEIS
001-010679
LICENSED ARCHITECT

I hereby certify that these drawings were prepared under my direct supervision & supervision; and that they, to the best of my knowledge, conform to the appropriate codes and ordinances.

11-12-12
Date

Kenneth F. Brandeis
Licensed Architect

11/30/12
My license expires

This certification applies to the following drawings:

AGENDA MEMO
MUNICIPAL SERVICES COMMITTEE
MEETING DATE: December 12, 2012

Issue Statement

PZC 2012-15: **326 Roger Road:** Petitioner seeks a variation to permit a 1,034 square foot detached accessory structure, a garage, where 800 square feet is the maximum permitted.

Applicable Regulations: Zoning Ordinance, Section 5A-5-9-5: Permitted Percentage of Rear Yard Occupied by Accessory Structures.
Zoning Ordinance, Section 5A-2-2-3: Variations.

General Information

Petitioner/
Property Owner: Keith Christensen
326 Roger Road
Darien, IL 60561

Property Location: 326 Roger Road

PIN: 09-26-100-006

Existing Zoning: R-2 Single-Family Residence

Existing Land Use: Single-family home

Surrounding Zoning and Land Use:

North: R-2 Single-Family Residence – single-family homes
South: R-2 Single-Family Residence – single-family homes
East: R-2 Single-Family Residence – single-family homes
West: R-2 Single-Family Residence – single-family homes

Comprehensive Plan Update: Low Density Residential

History: None.

Property: 13,500 square feet

Floodplain:	A portion of this property is located within a floodplain, and specifically, the area where the garage has been constructed.
Natural Features:	None.
Transportation:	Property has frontage on Roger Road.

Documents Submitted

This report is based on the following information submitted to the Community Development Department by the petitioner:

1. Plat of Survey, 1 sheet, prepared by Schomig Land Surveyors, Ltd., dated September 13, 2012.

Planning Overview/ Discussion

The subject property is located on the north side of Roger Road, east of Clarendon Hills Road.

The petitioner has enlarged an existing detached garage without obtaining a building. The garage as enlarged is 1,034 square feet in area. The Zoning Ordinance limits detached accessory structures to 800 square feet.

The garage complies with building setbacks and maximum permitted lot coverage.

The garage is located within a floodplain. Under the DuPage County Countywide Stormwater Management and Floodplain Ordinance, construction activity within a floodplain requires the County to certify that it complies with the Countywide Ordinance. The petitioner is in the process of going through the County review.

Before the City can issue a building permit, both the variation from the Zoning Ordinance must be approved and the County must certify that the garage complies with the Countywide Stormwater Management and Floodplain Ordinance.

The variation request must address the following criteria for approval:

1. Whether the general character of the property will be adversely altered.
2. Whether the overall value of the property will be improved and there will not be any

potential adverse effects on the neighboring properties.

3. Whether the alleged need for the variation has been created by any person presently having a proprietary interest in the premises.
4. Whether the proposed variation will impair an adequate supply of light and air in adjacent property, substantially increase congestion in the public streets, increase the danger of fire or endanger the public safety.
5. Whether the proposed variation will adversely alter the essential character of the neighborhood.

Staff Findings/Recommendations

The proposed variation does not adversely alter the essential character of the lot nor does it adversely alter the essential character of the neighborhood. The proposed variation does not impair the adequate supply of light and air onto adjacent properties.

Therefore, staff recommends the Planning and Zoning Commission make the following recommendation granting the variation petition:

Based upon the submitted petition and the information presented, the request associated with PZC 2012-15 is in conformance with the standards of the Darien City Code and, therefore, I move the Planning and Zoning Commission recommend approval of the petition, subject to:

1. **DuPage County certifying the garage as constructed complies with the DuPage County Countywide Stormwater Management and Floodplain Ordinance.**

Planning and Zoning Commission Review – December 5, 2012

The Planning and Zoning Commission considered this matter on December 5, 2012. The following members were present: Beverly Meyer – Chairperson, Ronald Kiefer, John Lind, Raymond Mielkus, Pauline Oberland, Kenneth Ritzert, Michael Griffith – Planner and Elizabeth Lahey – Secretary.

Members absent: Donald Hickok, Louis Mallers and Susan Vonder Heide.

Michael Griffith, Senior Planner, reviewed the staff agenda memo. He stated the garage was enlarged without a building permit and the garage is located within a floodplain which complicates matters. He stated the petitioners are going through the County review related to floodplain regulations. He stated the variation petition before the Commission is related to the square footage

of the garage. He stated that assuming the variation on the garage size is approved, and the County certifies the garage complies with the Countywide Stormwater and Floodplain Management Ordinance, the City can issue a building permit.

He stated the garage complies with building setbacks and lot coverage regulations.

Keith and Laura Christensen, the petitioners, were present. He stated they needed to enlarge their existing garage to store an antique car, a boat and still have room to park their other vehicles.

Commissioner Oberland asked the petitioners why they did not obtain a building permit.

Mrs. Christensen stated they messed up. Mr. Christensen stated it started out was a garage remodel and snow balled into enlarging the garage.

There was a discussion on the floodplain and whether there were limits to the lot coverage within a floodplain. Mr. Griffith stated he does not think the floodplain regulations limit lot coverage, but the Zoning Ordinance does.

Mr. Christensen said their engineer is working with the County on how to accommodate the floodplain.

Mr. Griffith stated that aside from the initial complaint about construction activity occurring without a building permit, he has not received any other comments about the garage.

Ron Roti, 8828 Swan Lane, Darien, Illinois, stated he owns property on Roger Road is pleased others are making improvements to their property. He asked what was used to determine whether the garage was in the floodplain and what the property elevation was.

Mr. Griffith stated FEMA's floodplain map was used and the plat of survey submitted does not show the property elevation. He stated the petitioner is going through the County review so elevation information is being looked at the County.

The Commission instructed the petitioners to check if a building permit is required for future construction projects.

Without further discussion, Commissioner Oberland made the following motion seconded by Commissioner Kiefer:

Based upon the submitted petition and the information presented, the request associated with PZC 2012-15 is in conformance with the standards of the Darien City

Code and, therefore, I move the Planning and Zoning Commission recommend approval of the petition, subject to:

1. DuPage County certifying the garage as constructed complies with the DuPage County Countywide Stormwater Management and Floodplain Ordinance.

Upon a roll call vote, THE MOTION CARRIED by a vote of 6-0 (Commissioners Hickok, Mallers and Vonder Heide were absent.)

Municipal Services Committee – December 12, 2012

Based on the Planning and Zoning Commission's recommendation, staff recommends the Committee make the following recommendation approving the variation petition:

Based upon the submitted petition and the information presented, the request associated with PZC 2012-15 is in conformance with the standards of the Darien City Code and, therefore, I move the Municipal Services Committee recommend approval of the petition, subject to:

1. DuPage County certifying the garage as constructed complies with the DuPage County Countywide Stormwater Management and Floodplain Ordinance.

Decision Mode

The Planning/Zoning Commission considered this item at its meeting on December 5, 2012.
The Municipal Services Committee will consider this item at its meeting on December 12, 2012.

• BOUNDARY • TOPOGRAPHICAL • SUBDIVISIONS • ALTA/ACSM • CONDOMINIUMS • SITE PLANS • CONSTRUCTION • FEMA CERTIFICATES •

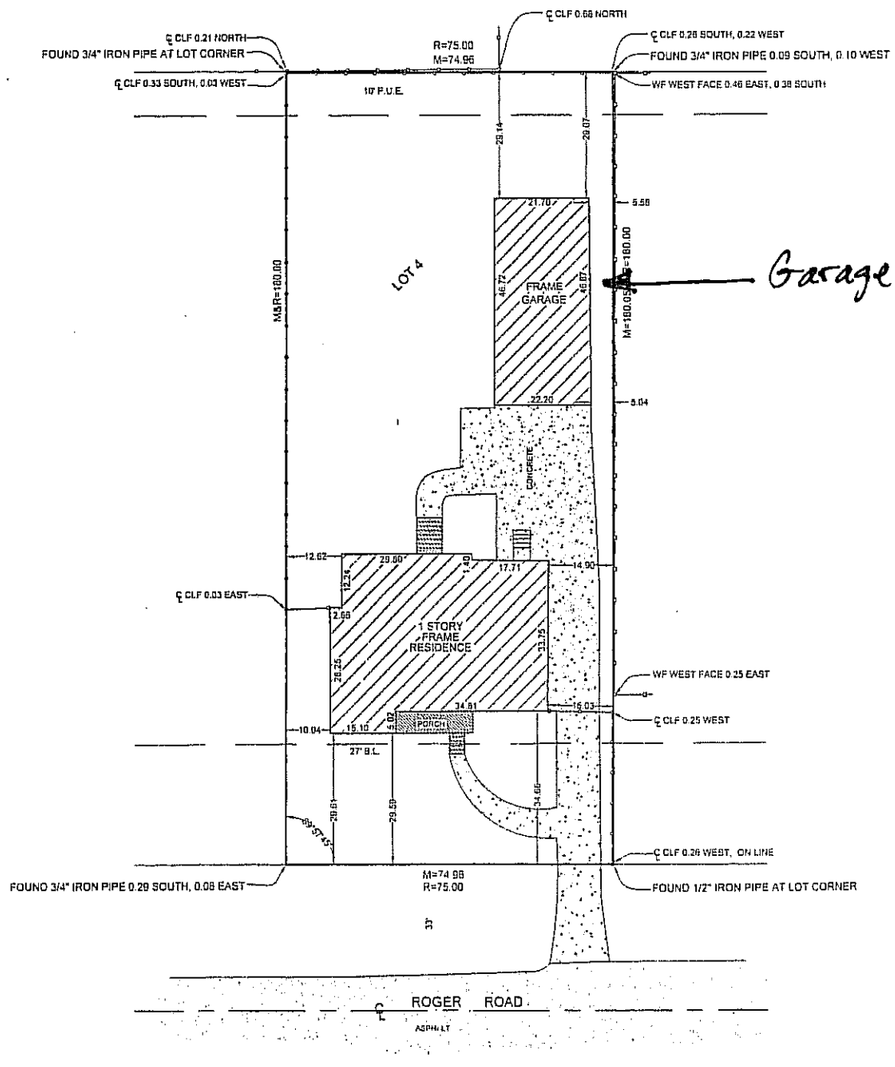
SCHOMIG LAND SURVEYORS, LTD.

PLAT OF SURVEY

909 EAST 31ST STREET
LA GRANGE PARK, ILLINOIS 60526
SCHOMIG-SURVEY@SBCGLOBAL.NET
WWW.LAND-SURVEY-NOW.COM
PHONE: 708-352-1452
FAX: 708-352-1454

LOT 4 IN BLOCK 49 IN TRI STATE VILLAGE UNIT NUMBER 6, BEING A SUBDIVISION OF THE SOUTHWEST 1/4 OF SECTION 23 AND PART OF THE NORTHWEST 1/4 OF SECTION 26, TOWNSHIP 38 NORTH, RANGE 11, EAST OF THE THIRD PRINCIPAL MERIDIAN, ACCORDING TO THE PLAT THEREOF RECORDED JUNE 10,1946 AS DOCUMENT NUMBER 499725, IN DU PAGE COUNTY, ILLINOIS.

COMMON ADDRESS: 326 ROGER ROAD, DARIEN.



SURVEYORS NOTE: FRAME GARAGE UNDER CONSTRUCTION AT TIME OF SURVEY.

THE CUSTOMER LISTED BELOW PROVIDED THE LEGAL DESCRIPTION SHOWN HEREON. WE DO NOT GUARANTEE THAT THIS IS THE CORRECT LEGAL DESCRIPTION FOR THE TRANSACTION INTENDED.

IMPORTANT: COMPARE LEGAL DESCRIPTION TO DEED OR TITLE POLICY AND REPORT ANY DISCREPANCY FOR CLARIFICATION OR CORRECTION IMMEDIATELY. UNLESS OTHERWISE NOTED, THIS PLAT DOES NOT SHOW BUILDING LINES OR OTHER RESTRICTIONS ESTABLISHED BY LOCAL ORDINANCES.

DO NOT SCALE DIMENSIONS FROM THIS PLAT; THE LOCATION OF SOME FEATURES MAY BE EXAGGERATED FOR CLARITY. NO EXTRAPOLATIONS MAY BE MADE FROM THE INFORMATION SHOWN WITHOUT THE WRITTEN PERMISSION OF SCHOMIG LAND SURVEYORS, LTD. ONLY PLATS WITH AN EMBOSSED SEAL ARE OFFICIAL DOCUMENTS. FIELD WORK WAS COMPLETED PER SURVEY DATE LISTED BELOW.

© COPYRIGHT, ALL RIGHTS RESERVED.

SURVEY DATE: SEPTEMBER 13TH, 2012.

BUILDING LOCATED: SEPTEMBER 13TH, 2012.

ORDERED BY: LAURA & KEITH CHRISTENSEN

PLAT NUMBER: 121351 & H20-143 SCALE: 1" = 20'

CALL BEFORE YOU DIG
JULIE
ILLINOIS ONE-CALL SYSTEM
1-888-258-0808

N

PROFESSIONAL LAND SURVEYORS DESIGN FIRM
909 E. 31ST ST.
LAGRANGE PARK, IL
60526
RUSSELL W. SCHOMIG
035-002446
PROFESSIONAL LAND SURVEYOR
STATE OF ILLINOIS
LICENSE EXPIRATION
11-30-2012

STATE OF ILLINOIS } ss.
COUNTY OF COOK }

LOT AREA: 13,493 Sq. Ft.

WE, SCHOMIG LAND SURVEYORS, LTD. AS AN ILLINOIS PROFESSIONAL DESIGN FIRM, LAND SURVEYOR CORPORATION, DO HEREBY CERTIFY THAT WE HAVE SURVEYED THE PROPERTY DESCRIBED IN THE LEGAL DESCRIPTION AFFIXED TO THIS PLAT.

ALL DIMENSIONS ARE IN FEET AND DECIMAL PARTS OF A FOOT. DIMENSIONS SHOWN ON BUILDINGS ARE TO THE OUTSIDE OF BUILDINGS. THE BASIS OF BEARINGS, IF SHOWN AND UNLESS OTHERWISE NOTED, ARE ASSUMED, AND SHOWN TO INDICATE ANGULAR RELATIONSHIP OF LOT LINES.

THIS PROFESSIONAL SERVICE CONFORMS TO THE CURRENT ILLINOIS MINIMUM STANDARDS FOR A BOUNDARY SURVEY.

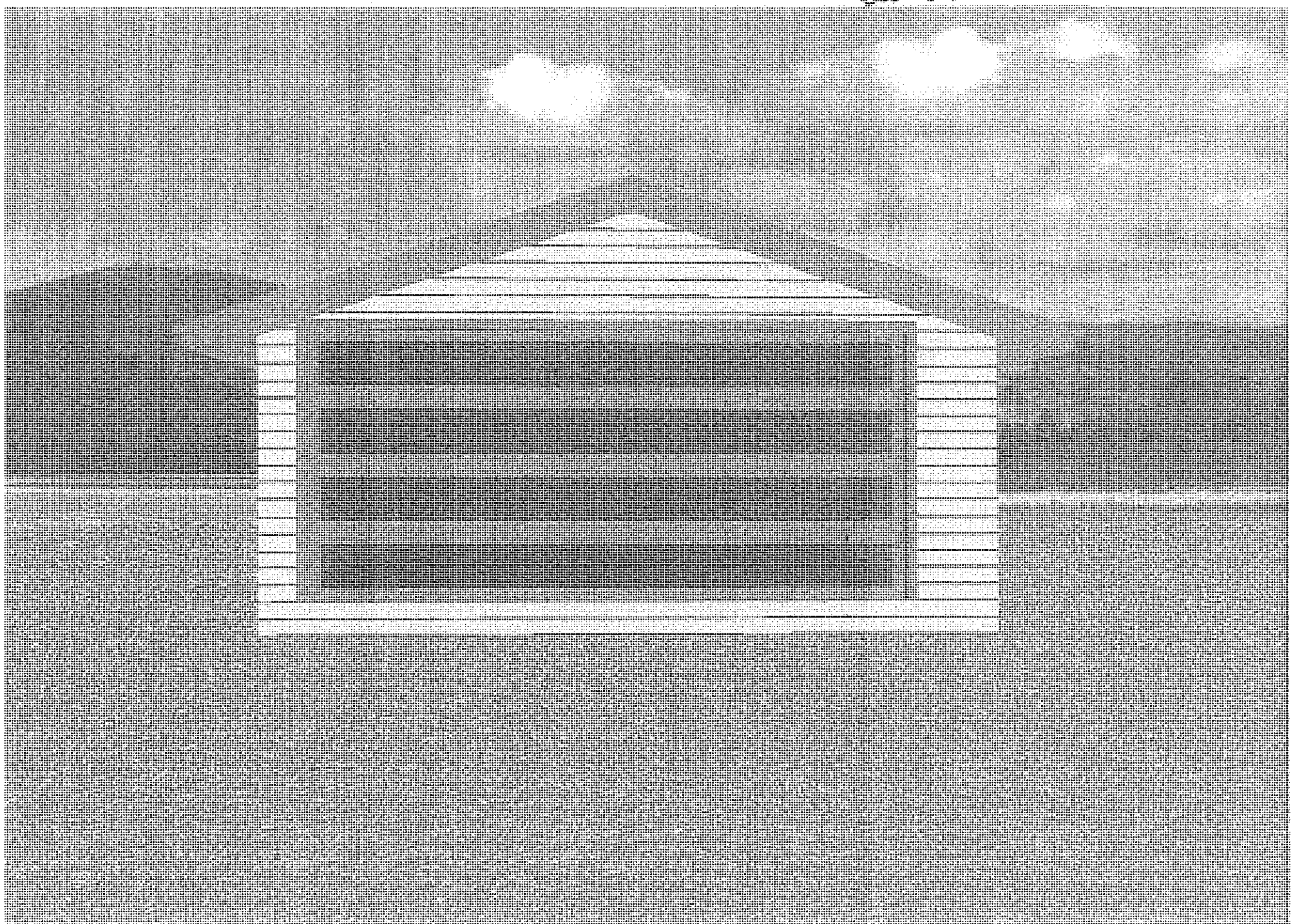
LEGEND

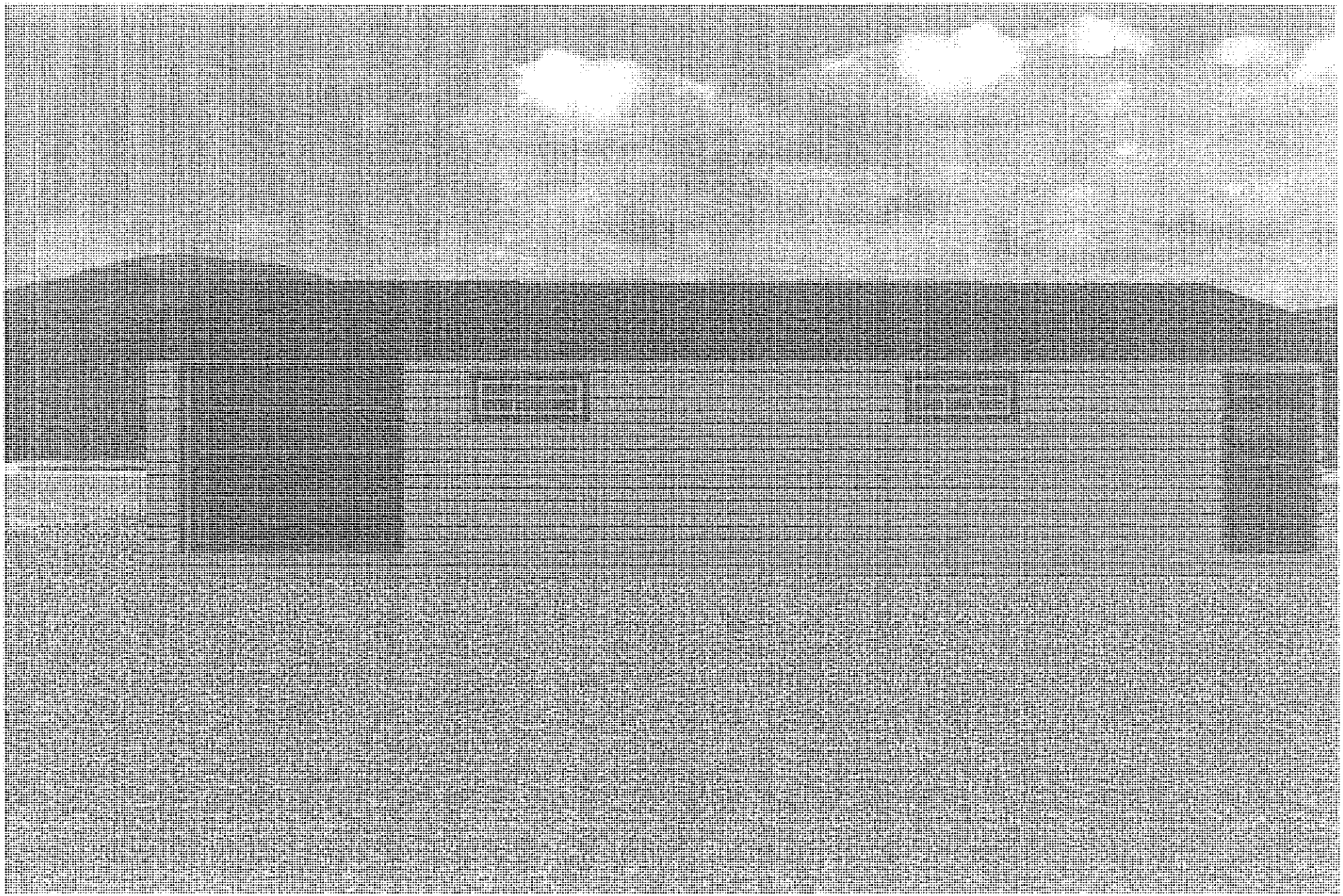
B.L.	=	BUILDING LINES
P.U.E.	=	PUBLIC UTILITY EASEMENT
R.	=	RECORDED DIMENSION
℄	=	CENTER LINE
C.L.F.	=	CHAIN LINK FENCE
W.F.	=	WOOD FENCE

BY: Russell W Schomig

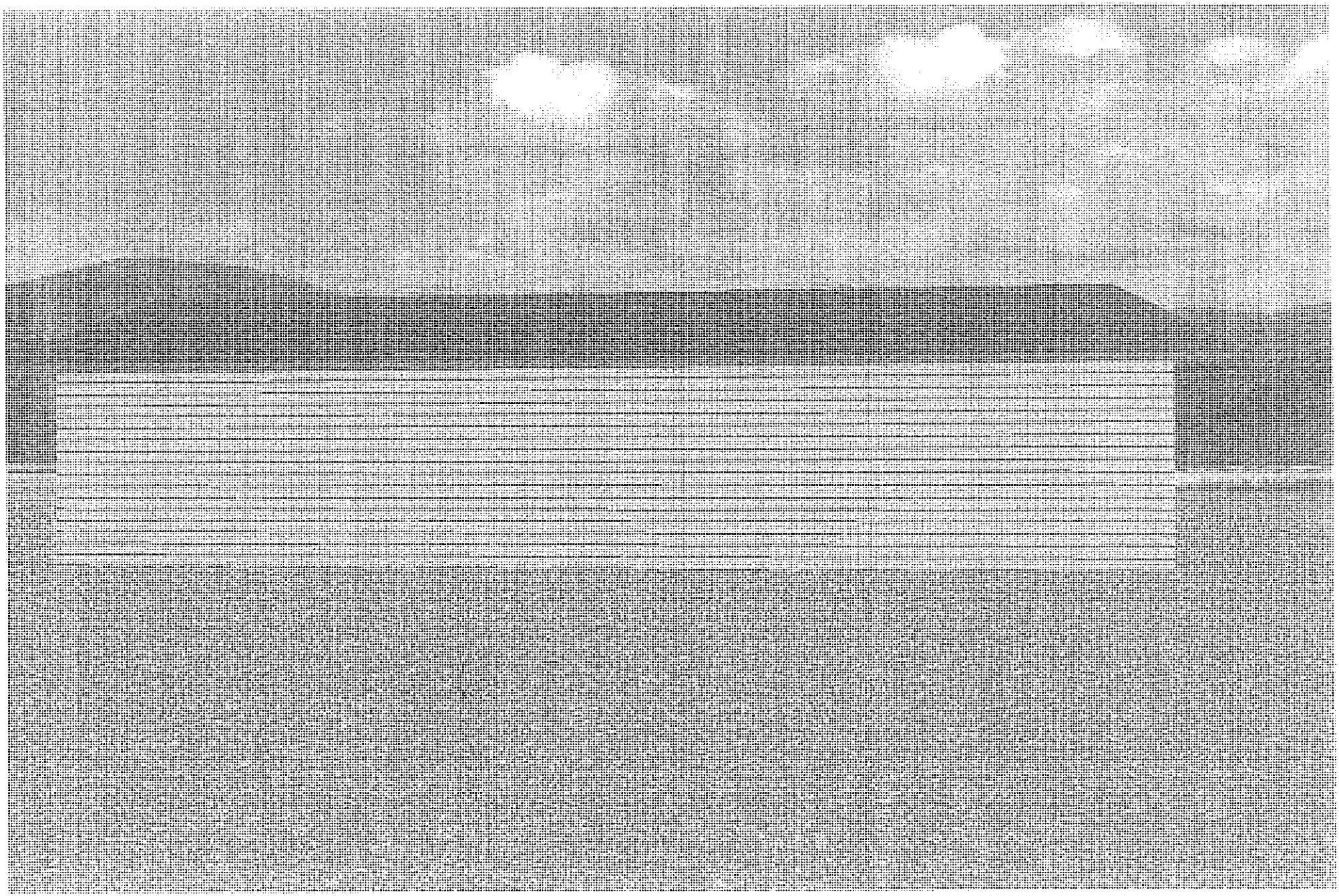
PROFESSIONAL ILLINOIS LAND SURVEYOR LICENSE NUMBER 035-002446

326 Roger Rd
Darien IL 60561

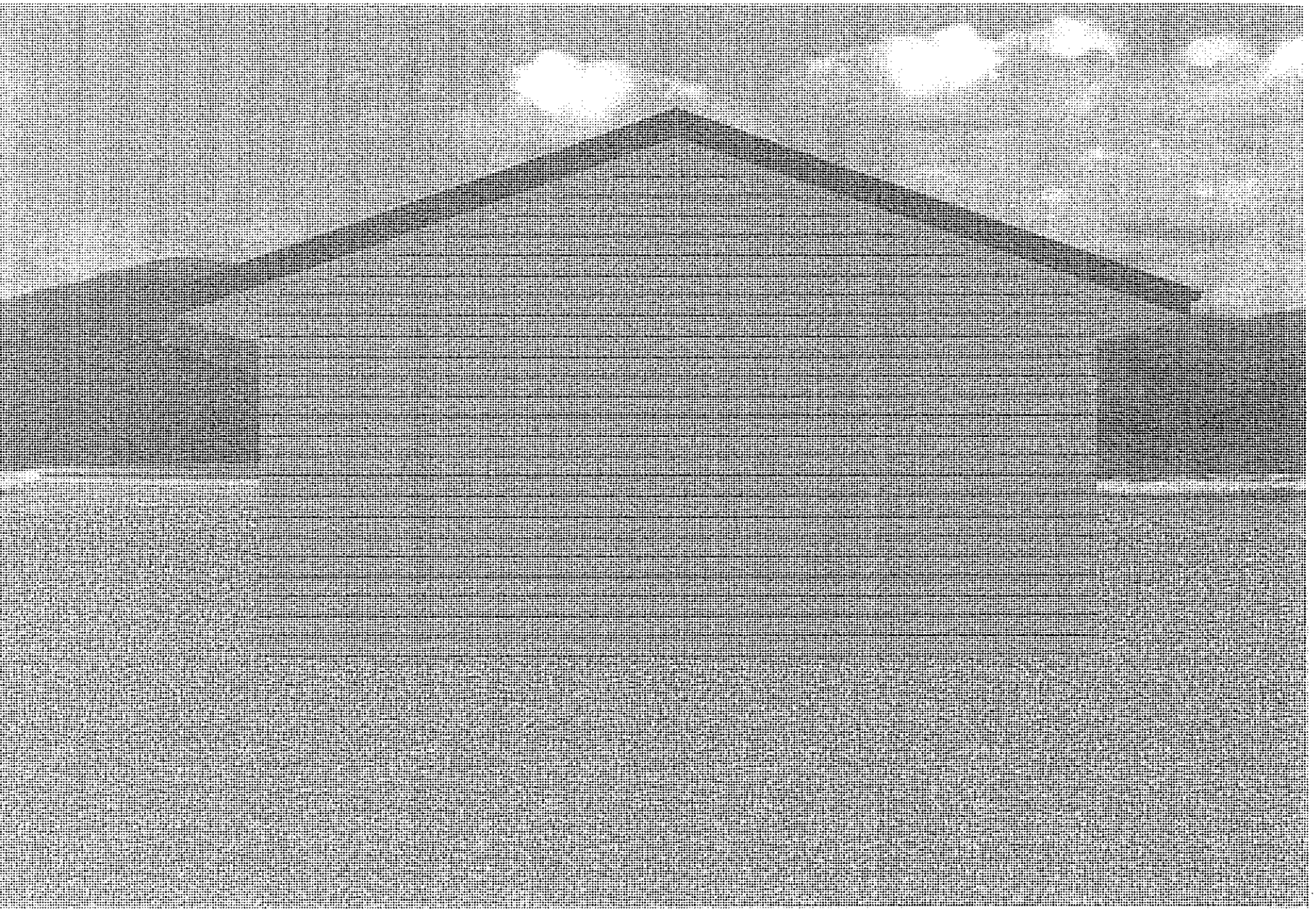




West



EAST



North

October 31, 2012

To whom this may concern:

In reference to how our garage will affect the neighborhood, and with all due respect to our fellow neighbors, we feel we are model citizens when it comes to taking care of our home and property. As you will see, attached are photos of various houses on Roger Road that are not as well kept as ours. We feel that remodeling and enlarging our garage is an improvement to the block and the neighborhood.

We hope to be role models for other houses and vacant properties on our block. We would like our improvements to start a trend for the rest of the area because unfortunately these dilapidated homes make up for more than 60% of the homes on our block.

We hope you will take this into consideration when it comes to the decision about our situation. We do not wish to offend anyone by presenting this matter, but we feel it was necessary to address this.

Sincerely,

Keith and Laura Christensen

326 Roger Road, Darien Il 60561

(630) 360-5819

Our House

House Siding Brown
Garage Siding White

Rental Property

DETERIORATED SIDING ON ENTIRE HOUSE

CONCRETE STAIRS CRUMBLING

HOLE IN DOOR & CLUTTERED YARD

CONCRETE POURED LAST YEAR

VACANT RENTAL PROPERTY PAINTED PURPLE
STONE DRIVEWAY NO GARAGE DOOR

FRONT PORCH STORAGE & NO YARD MAINTENANCE
DURING SUMMER

VACANT PROPERTY

VACANT PROPERTY

AGENDA MEMO
MUNICIPAL SERVICES COMMITTEE
MEETING DATE: December 12, 2012

Issue Statement

Building Codes: Discussion on proposed adoption of updated editions model building codes.

Planning Overview/ Discussion

Working with the City's consultant, Don Morris Architects P.C., which provides Darien with building plan reviews and building inspections, staff has reviewed the 2012 edition of model building codes and the 2011 edition of the electrical code. The following table notes the current and proposed codes:

Current Codes	Proposed Codes
2006 International Residential Code (One and Two-Family Dwellings)	2012 International Residential Code (One and Two-Family Dwellings)
2006 International Building Code (Commercial, Multi-Family Residential Dwellings)	2012 International Building Code (Commercial, Multi-Family Residential Dwellings)
2006 International Mechanical Code	2012 International Mechanical Code
2005 National Fire Protection Association National Electrical Code (aka, Electrical Code)	2011 National Fire Protection Association National Electrical Code (aka, Electrical Code)
2004 Illinois State Plumbing Code	2004 Illinois State Plumbing Code
2006 International Fire Code	2012 International Fire Code
2006 International Property Maintenance Code	2012 International Property Maintenance Code

Concerning the Illinois State Plumbing Code, there has not been an update.

Concerning the Building Code, a significant change includes taking out local amendments providing exceptions on when fire sprinklers where required and going with the model code requirements. The local amendments were creating more problems than benefits when applying the code to alterations of existing commercial/office/industrial buildings.

Concerning the model Residential Code, a significant change includes requiring new single-family detached homes to be fire sprinkled. The draft ordinance includes a local amendment removing this

requirement.

While the core building standards and practices have not changed much in the past 20 years, it is important to periodically review the standards, because there is always the need to clarify language and to acknowledge new technologies.

The Fire Districts serving Darien have been notified of the proposed model codes as well as the proposed local amendments. Staff asked each of the Districts to review specifically the proposed Fire Code and local amendments.

A draft copy of the changes to Title 4 of the City Code is attached. The revised Title 4 adopts each of the above codes by reference and adopts amendments to several of the model codes per the recommendations of the City's architect/building inspection consultants and Fire Districts.

Staff Findings/Recommendations

This item is for discussion only.

Municipal Services Committee – October 22, 2012

Changes to the draft ordinance have been noted with either language to be stricken (~~stricken~~) or with new language in red (red). Brief explanations to these changes are noted in italics (*italics*). Staff proposes adopting one additional model code, the 2012 International Energy Conservation Code, noted below in the revised table.

Current Codes	Proposed Codes
2006 International Residential Code (One and Two-Family Dwellings)	2012 International Residential Code (One and Two-Family Dwellings)
2006 International Building Code (Commercial, Multi-Family Residential Dwellings)	2012 International Building Code (Commercial, Multi-Family Residential Dwellings)
2006 International Mechanical Code	2012 International Mechanical Code
2005 National Fire Protection Association National Electrical Code (aka, Electrical Code)	2011 National Fire Protection Association National Electrical Code (aka, Electrical Code)
2004 Illinois State Plumbing Code	2004 Illinois State Plumbing Code

2006 International Fire Code	2012 International Fire Code
2006 International Property Maintenance Code	2012 International Property Maintenance Code
	2012 International Energy Conservation Code

Municipal Services Committee Review – December 12, 2012

Since the last Committee review, additional revisions have been made after staff met with our building plan review consultant, Don Morris Architects P.C., Tri-State Fire Protection District and Darien-Woodridge Fire Protection District. In terms of sprinkling requirements for commercial structures, the current Darien amendments to the code have been put back into the draft code. Loop holes were taken out that allowed some renovations of commercial spaces to proceed without sprinkling.

Another revision, concerning residential structures, floor trusses and prefabricated wood I-joists must be provided with 5/8 inches drywall, a fire rated drop ceiling or an automatic sprinkler system.

Changes to the draft ordinance have been noted with either language to be stricken (~~stricken~~) or with new language in red (red). Brief explanations to these changes are noted in italics (*italics*).

Staff Findings/Recommendations

Staff recommends the Committee make a motion recommending approval of the proposed building and related codes, including proposed amendments.

Decision Mode

The Municipal Services Committee considered this item at its meeting on September 24, 2012.
The Municipal Services Committee considered this item at its meeting on October 22, 2012.
The Municipal Services Committee will consider this item at its meeting on December 12, 2012.

BUILDING REGULATIONS

DARIEN BUILDING CODE

4-1-1: TITLE, CITATIONS AND SUBSTITUTIONS:

4-1-1-1: TITLE:

This chapter shall be known as the *DARIEN BUILDING CODE.*

4-1-1-2: CITATIONS:

In citing this chapter, section numbers shall be used except in cases where codes have been adopted and incorporated by reference, in which case the section shall be followed by sections used in such code adopted and incorporated by reference.

4-1-1-3: SUBSTITUTIONS:

Where codes have been adopted and incorporated by reference, the words "City of Darien" shall be substituted for words referring to the applicable municipality and where such codes contain provisions which are in conflict with specific provisions of this chapter the specific provisions of this chapter shall prevail and shall rule.

4-1-2: GENERAL PROVISIONS:

4-1-2-1: ESTABLISHMENT OF THE DEPARTMENT OF COMMUNITY DEVELOPMENT:

(A) There is hereby established a department of the city known as the department of community development which shall embrace a director of community development, senior planner and such assistants, clerks and employees as may be necessary.

(B) All references in this code, the building code, the zoning ordinance, the sign code, the subdivision regulations, the fire prevention code, and in all other ordinances, resolutions and motions, and rules and regulations of the city to the "building department", the "building and zoning department", the "bureau of fire prevention", shall henceforth be construed to refer to and mean the department of community development.

4-1-2-2: DIRECTOR OF COMMUNITY DEVELOPMENT:

(A) The director of community development shall be appointed by the mayor with the advice and consent of the city council and subject to removal by the mayor. The director shall be in

charge of the department of community development and shall institute such measures and prescribe such rules and regulations for the control of subordinate officers and employees and shall secure the inspection of buildings while in the process of construction, alteration, repair or removal, and enforcement of all provisions of the building code.

The director of community development is hereby authorized to employ, by and with the consent of the city administrator, such inspectors or assistants as may be necessary in the execution of the duties mentioned in the building code or other ordinances as may be from time to time required.

The director of community development is hereby authorized to require as a condition to an application and issuance of a permit that the applicant pay fees in addition to those otherwise provided herein of review by other than staff members of plans and specifications.

(B) The duties of the director of community development shall include, but are not limited to, all of the duties of the building department supervisor, the building official, the director of building and zoning, the fire official, the code official, the fire marshal, the chief of the bureau of fire prevention, the zoning enforcement officer, the building commissioner, the city planner, the building inspector, the building and zoning director and the building supervisor as set forth in this code, in the building code, in the zoning ordinance, in the sign code, in the subdivision regulations, in the fire prevention code, and in all other ordinances, resolutions and motions, and rules and regulations of the city.

All references in this code, the building code, the zoning ordinance, the sign code, the subdivision regulations, the fire prevention code, and in all other ordinances, resolutions and motions, and rules and regulations of the city to the "building department supervisor", the "building official", the "director of building and zoning", the "fire official", the "code official", the "fire marshal", the "chief of the bureau of fire prevention", the "zoning enforcement officer", the "building commissioner", the "city planner", the "building inspector", the "building and zoning director" and the "building supervisor" shall henceforth be construed to refer to and mean the director of community development.

4-1-3: SINGLE-FAMILY DWELLINGS, DUPLEXES AND TWO-FLAT BUILDING CONSTRUCTION REGULATIONS AND STANDARDS:

4-1-3-1: ADOPTION OF INTERNATIONAL RESIDENTIAL CODE:

There is hereby adopted and incorporated by reference as a part of this section, the code entitled "~~2006~~ 2012 international residential code", three (3) copies of which are on file in the office of the city.

4-1-3-2: AMENDMENTS TO CODE:

The ~~2006~~ 2012 international residential code, as adopted in section 4-1-3-1 of this chapter shall be amended as follows:

(A) Section R-101.1 - Insert the "City of Darien" for [name of jurisdiction].

(B) Section R-108.2 - Revise to read as follows:

See City code of Darien for appropriate fee schedules.

(C) Section R-113.4 - Revise to read as follows:

Violation penalties: See the City code of Darien for penalties for violations of the provisions of this code.

(D) Section R-302.1 and Table R-302.1(1) – Delete (Exterior Walls)

"Exterior Walls" deals with a required fire rating of a buildings exterior wall based on its setback from lot lines. This is a commercial requirement and will have a negative impact on detached accessory buildings, i.e., sheds and detached garages.

(E) Section R-309 - Revise to read as follows:

~~R-309.9 –~~ A ducted cold air return is required in every sleeping room.

(F) Section R-313 – Delete. (Automatic Fire Sprinkler Systems)

The City of Darien has approximately 15 available open lots to build on. Also, given that fire sprinklers cost approximately $3.00 per square foot and do not substantially lower homeowners insurance rates, staff recommends deleting this requirement.

(G) Section R-320 – Delete. (Accessibility)

This section deals with handicapped accessibility. The 1997 Illinois Handicap Accessibility Code is a State mandated code. Therefore, Section R-320 is not applicable.

(H) Section R-321 – Delete. (Elevators and Platform Lifts)

(I) Section R-322.1.9 – Delete. (Manufactured Homes)

(J) Section R-403.1 – Revise to add the following:

Pier footings are acceptable for open porches only and not acceptable for screened-in porches, 3-season rooms or sunrooms.

(K) Section R-403.2 – Delete. (Footings for Wood Foundations)

Wood foundations are not permitted in this Climate Zone.

(L) Sections R-403.3 through R-403.3.4 – Delete. (Frost Protected Shallow Foundations)

Wood foundations are not permitted in this Climate Zone.

(M) Sections R-404.2 through R-404.4.11 – Delete all sections and tables in their entirety. (Wood Foundation Walls)

Wood foundations are not permitted in this Climate Zone.

(N) Section R-405.2 – Delete. (Wood Foundations)

Wood foundations are not permitted in this Climate Zone.

(O) Section R-406.3 – Delete. (Dampproofing for Wood Foundations)

Wood foundations are not permitted in this Climate Zone.

(P) Section R-1006.1 - Revise to read as follows:

~~R-1006.1~~ Exterior Air: Factory-built or masonry fireplaces covered in this chapter shall be equipped with an exterior air supply to assure proper fuel combustion unless the room is mechanically ventilated and controlled so that the indoor pressure is neutral or positive. Ventless or vent-free fireplaces are prohibited.

(Q) Chapter 25 – Delete. (Plumbing Administration)

Chapters 25-41 are covered in the National Electrical Code and the 2004 Illinois Plumbing Code.

(R) Chapter 26 - Delete. (General Plumbing Requirements)

Chapters 25-41 are covered in the National Electrical Code and the 2004 Illinois Plumbing Code.

(S) Chapter 27 - Delete. (Plumbing Fixtures)

Chapters 25-41 are covered in the National Electrical Code and the 2004 Illinois Plumbing Code.

(T) Chapter 28 - Delete. (Water Heaters)

Chapters 25-41 are covered in the National Electrical Code and the 2004 Illinois Plumbing Code.

(U) Chapter 29 - Delete. (Water Supply And Distribution)

Chapters 25-41 are covered in the National Electrical Code and the 2004 Illinois Plumbing Code.

(V) Chapter 30 - Delete. (Sanitary Drainage)

Chapters 25-41 are covered in the National Electrical Code and the 2004 Illinois Plumbing Code.

(W) Chapter 31 - Delete. (Vents)

Chapters 25-41 are covered in the National Electrical Code and the 2004 Illinois Plumbing Code.

(X) Chapter 32 - Delete. (Traps)

Chapters 25-41 are covered in the National Electrical Code and the 2004 Illinois Plumbing Code.

(Y) Chapter 33 - Delete. ~~(General Requirements)~~ (Storm Drainage)

Chapters 25-41 are covered in the National Electrical Code and the 2004 Illinois Plumbing Code.

(Z) Chapter 34 - Delete. ~~(Electrical Definitions)~~ (General Requirements)

Chapters 25-41 are covered in the National Electrical Code and the 2004 Illinois Plumbing Code.

(AA) Chapter 35 - Delete. ~~(Services)~~ (Electrical Definitions)

Chapters 25-41 are covered in the National Electrical Code and the 2004 Illinois Plumbing Code.

(BB) Chapter 36 - Delete. ~~(Branch Circuit And Feeder Requirements)~~ (Services)

Chapters 25-41 are covered in the National Electrical Code and the 2004 Illinois Plumbing Code.

(CC) Chapter 37 - Delete. ~~(Wiring Methods)~~ (Branch Circuit and Feeder Requirements)

Chapters 25-41 are covered in the National Electrical Code and the 2004 Illinois Plumbing Code.

(DD) Chapter 38 - Delete. ~~(Power And Lighting Distribution)~~ (Wiring Methods)

Chapters 25-41 are covered in the National Electrical Code and the 2004 Illinois Plumbing Code.

(EE) Chapter 39 - Delete. ~~(Devices And Luminaries)~~ (Power and Lighting Distribution)

(FF) Chapter 40 - Delete. ~~(Appliance Installation)~~ (Devices and Luminaries)

Chapters 25-41 are covered in the National Electrical Code and the 2004 Illinois Plumbing Code.

(GG) Chapter 41 - Delete. ~~(Swimming Pools)~~ (Appliance Installation)

Chapters 25-41 are covered in the National Electrical Code and the 2004 Illinois Plumbing Code.

(HH) Chapter 42 - Delete. ~~(Class 2 Remote Control Signaling And Power-Limited Circuits)~~ (Swimming Pools)

(II) Chapter 43 – Delete. (Class Remote Control Signaling and Power Limited Circuits)

(JJ) Chapter 44 – Delete. (Referenced Standards)

(KK) ~~2006~~ 2012 International Residential Code Electrical Provisions/National Code Cross Reference (appendix Q) - Delete.

(LL) Agricultural exception: Accessory buildings on existing, legal nonconforming agricultural properties that are utilized as stables and livestock shelters, where no vehicle storage will take place will be allowed in accordance with the following requirements:

1. Required concrete floor slabs may be omitted in those specific areas of livestock buildings or structures used by the livestock upon approval of the director of community development.

2. Other than in subsection (X)1 of this section, floors shall be concrete, asphalt or wood installed to prevent the seepage of hazardous, toxic or combustible liquids into the ground.

3. All accessory buildings shall be securely anchored to the ground.

4. Pre-engineered accessory building kits shall be installed in accordance with manufacturer's specifications and plans.

(MM) Floor Trusses and Prefabricated Wood I-Joists: Floor trusses and prefabricated wood I-joists must be protected by 5/8-inch gypsum board, a fire rated drop ceiling or an automatic

sprinkler system. If installed above a crawl space, provide a smoke detector and protected opening to the crawl space.

Provides added protection to floor trusses and prefabricated wood I-joists to help avoid a floor collapse in the event of a fire.

4-1-3-3: APPLICATION TO BUILDINGS AND STRUCTURES:

The rules and regulations adopted in section 4-1-3-1 of this chapter shall apply to the following buildings and structures:

(A) Single-family detached residences.

(B) Duplex houses (2 units side by side) and two-family apartments or flats.

(C) Detached accessory structures.

4-1-4: REGULATIONS AND STANDARDS FOR CONSTRUCTION OF ALL OTHER BUILDINGS INCLUDING RESIDENTIAL (OTHER THAN ONE- AND TWO-FAMILY), ASSEMBLY, COMMERCIAL, OFFICE, STORAGE, EDUCATIONAL, INDUSTRIAL AND INSTITUTIONAL:

4-1-4-1: ADOPTION OF INTERNATIONAL BUILDING CODE:

There is hereby adopted and incorporated by reference as part of this section, the code entitled the "~~2006~~ 2012 international building code", three (3) copies of which are on file in the office of the city.

4-1-4-2: AMENDMENTS TO CODE:

The ~~2006~~ 2012 international building code, as adopted in section 4-1-4-1 of this chapter shall be amended as follows:

(A) Section 101.1 - Insert the "City of Darien" for [name of jurisdiction].

(B) Section ~~108.2~~ 109.2 - Revise to read as follows:

109.2 - See city code of Darien for appropriate fee schedules.

(C) Section ~~113.4~~ 114.4 - Revise to read as follows:

114.4 - Violation penalties: See city code of Darien for penalties for violations of the provisions of this code.

(D) Section ~~114.3~~ 117.2 - Revise to read as follows:

117.2 - A fine of not less than $100.00 or more than $1,000.00 for each day the above violation shall be imposed.

(E) Section 903.2.1.1 - Revise to read as follows:

An automatic fire suppression system shall be provided in use group A-1 occupancies when a structure's gross square footage is 2,500 square feet or more.

(F) Section 903.2.1.2 - Revise to read as follows:

An automatic fire suppression system shall be provided in all use group A-2 occupancies.

(G) Section 903.2.1.3 - Revise to read as follows:

An automatic fire suppression system shall be provided in all use group A-3 occupancies when a structure's gross square footage is 2,500 square feet or more.

(H) Section 903.2.1.4 - Revise to read as follows:

An automatic fire suppression system shall be provided in all use group A-4 occupancies when a structure's gross square footage is 2,500 square feet or more.

(I) Section 903.2.5 - Revise to read as follows:

An automatic fire suppression system shall be provided in all use group I occupancies.

Exception:
1. Where use group I-2 child care facilities are located in R-3 and R-4 occupancies in compliance with the Illinois department of child and family services.

(J) Section 903.2 - Revise to read as follows:

An automatic fire suppression system shall be provided in all use group B, E, F, M and S occupancies when a structure's gross square footage is 2,500 square feet or more.

The above section in red was re-inserted into the proposed code, this language current exists as Darien local amendments to the 2006 International Building Code.

4-1-4-3: APPLICATION TO BUILDINGS AND STRUCTURES:

The building code adopted in section 4-1-4-1 of this chapter shall apply to all buildings and structures other than one- and two-family residences and other buildings normally accessory to them.

4-1-5: REGULATIONS AND STANDARDS GOVERNING THE CONSTRUCTION AND USE OF MECHANICAL EQUIPMENT:

4-1-5-1: ADOPTION OF INTERNATIONAL MECHANICAL CODE:

There is hereby adopted and incorporated by reference as part of this section, the code entitled "~~2006~~ 2012 international mechanical code", three (3) copies of which are on file in the office of the city.

4-1-5-2: AMENDMENTS TO MECHANICAL CODE:

The ~~2006~~ 2012 international mechanical code as adopted in section 4-1-5-1 of this chapter shall be amended as follows:

(A) Insert "the City of Darien" wherever the code refers to jurisdiction.

(B) Wherever fee schedules, dollar amounts, offenses, or time limits are referred to in this code, the code of the City of Darien shall apply.

(C) Section 927 – Add the following:

Section 927 - Ventless and vent free fireplaces are prohibited.

4-1-5-3: ADOPTION OF SAFETY CODE FOR EXISTING ELEVATORS AND ESCALATORS ("ELEVATOR CODE"):

There is hereby adopted and incorporated by reference as part of this section, the code entitled "safety code for existing elevators and escalators, 2005 edition", by the American Society of Mechanical Engineers, three (3) copies of which are on file in the office of the city.

4-1-5-4: AMENDMENTS TO ELEVATOR CODE:

The safety code for existing elevators and escalators, as adopted in section 4-1-5-3 of this chapter shall be amended to read as follows:

(A) Insert the "City of Darien" wherever the code refers to jurisdiction.

(B) Section 1.4: Definitions - Revise to read as follows:

Building Code: The ~~2006~~ 2012 international building code, and as amended by section 4-1-4-2 of this chapter.

4-1-6: STANDARDS AND SPECIFICATIONS, RULES AND REGULATIONS OF THE NATIONAL ELECTRICAL CODE:

4-1-6-1: ADOPTION OF NATIONAL FIRE PROTECTION ASSOCIATION NATIONAL ELECTRICAL CODE:

The standards and specifications, rules and regulations of the National Fire Protection Association national electrical code, ~~2005~~ 2011 edition, as published by the National Fire Protection Association except as amended herein, are hereby adopted as the standards and specifications, rules and regulations for installation, alteration, repair and use of electrical equipment, subject however, to the additional standards and specifications, rules and regulations as hereinafter set forth, and except where they are in conflict with the other provisions of this code and said code is hereby incorporated herein by reference.

~~4-1-6-2: AMENDMENTS TO CODE:~~

~~The National Fire Protection Association national electrical code, as adopted in section 4-1-6-1 of this chapter shall be amended to read as follows:~~

~~(A) Article 394 - Concealed Knob-End Tube - Delete.~~

~~(B) Article 334 - Nonmetallic-Sheathed Cable - Delete.~~

~~(C) Article 330 - Metal Clad Cable; Shielded Nonmetallic Sheathed Cable; 338 Service Entrance Cable. The provisions of these articles may be permitted only upon written authorization of the building official after sufficient justification as to the special circumstances making necessary such permission.~~

~~(D) Article 352 - Rigid Nonmetallic Conduit. The provisions of this article may be permitted only upon the written authorization of the building official after sufficient justification as to the special circumstances making necessary such permission.~~

4-1-7: PLUMBING INSTALLATION, ALTERATION AND USE REGULATIONS AND STANDARDS:

4-1-7-1: ADOPTION OF THE PLUMBING CODE OF THE STATE OF ILLINOIS:

There is hereby adopted and incorporated by reference as part of this section, the code entitled "Illinois state plumbing code 2004 edition", three (3) copies of which are on file in the office of the city.

4-1-7-2: ADDITIONS TO CODE:

Additions to the Illinois state plumbing code, as adopted in section 4-1-7-1 of this chapter, are as follows:

(A) The installation of water conserving plumbing fixtures in all new construction and in all repair and/or replacement of fixtures shall be required according to the following table:

Fixtures	Maximum Flow*
Water closets, tank top	2.5 gals per flush
Water closets, flushometer type	3.0 gals per flush
Urinals, tank type	3.0 gals per flush
Urinals, flushometer type	3.0 gals per flush
Shower heads	3.0 GPM
Lavatory, sink faucets	3.0 GPM
*Note: Flow based on 40 to 50 psi pressure.	

(B) Closed water systems shall be required on all water using air conditioning systems in new construction or remodeling.

(C) Metering or self-closing faucets shall be required on all lavatories for public use in new construction or remodeling.

(D) Water recycling systems shall be required on all new construction or remodeled car wash equipment installations.

4-1-7-3: AMENDMENTS TO CODE:

The Illinois state plumbing code, as adopted in section 4-1-7-1 of this chapter shall be amended as follows:

(A) Table A - Items 3) and 4) add footnote 3 for type M copper. Type M copper is not permitted for water distribution systems.

(B) All drain lines must be permitted smaller than four inch (4") diameter material.

4-1-8: FIRE PREVENTION AND CONTROL REGULATIONS AND STANDARDS:

4-1-8-1: ADOPTION OF THE INTERNATIONAL FIRE CODE ~~OF THE BUILDING OFFICIALS AND CODE ADMINISTRATORS INTERNATIONAL, INC.~~:

There is hereby adopted and incorporated by reference as part of this section, the code entitled "~~2006~~ 2012 international fire code", printed in pamphlet form ~~by the Building Officials and Code Administrators International, Inc., including no errata sheets inserted~~, three (3) copies of which are on file with the city.

4-1-8-2: AMENDMENTS TO CODE:

The ~~2006~~ 2012 international fire code, as adopted in section 4-1-8-1 of this chapter shall be amended as follows:

(A) Section 101.1 - Insert "City of Darien" for [name of jurisdiction].

(B) Section 108 - Revise board of appeals to read:

Whenever the chief of the bureau of fire prevention shall disapprove an application, or refuse to grant a permit, or when it is claimed that the provisions of this article have been misconstrued or wrongly interpreted, the applicant or person affected may appeal from the decision of the director of building and zoning to the planning and zoning commission of the City of Darien. Appeals made pursuant to this section shall be in accordance with the procedures set forth in the city's zoning ordinance.

(C) Section 503.1 - Revise to read:

Fire apparatus access roads shall be provided so that:

1. Public or private access is provided to each building so that the first responding fire district pumper unit will be able to be so located that all points of the interior of the building may be reached by one hundred fifty (150) feet of initial attack hose.

a. Where the size of the building does not allow this regulation to be met, an interior standpipe system equipped with fire department hose connections approved by the fire official may be allowed as an exception. The standpipe system shall be connected to a public water system.

2. Public or private access for motor fire apparatus shall be provided around the building so that there may be proper operation of ladders and mechanically elevated mechanisms.

3. Access routes shall be so arranged that fire department apparatus may respond from all points of the building to adjacent fire hydrants along routes not to exceed two hundred fifty (250) feet from the most remote point of the building to the closest fire hydrant.

4. Fire lanes on private property shall be approved by the fire official, and parking of motor vehicles otherwise obstructing such fire lanes or access routes shall be prohibited at all times. Permanent all-weather signs identifying fire lanes and access ways shall be posted.

5. In commercial developments public or private fire department access roads and ways shall be all weather, properly maintained and accessible at all times. A minimum of eight (8) inches of granular stone surfaced by at least two (2) inches of bituminous asphalt material. Fire lanes in residential developments shall be reviewed by the fire official for adequacy.

6. Access roads or fire lanes shall be not less than fifteen (15) feet from the building and further if the height of the building requires a greater setback to ladder the buildings.

7. Access routes shall be continuous around the building.

a. This requirement may be modified by the fire official where adequate building access openings, a complete fire suppression system and high rise provisions are provided.

(D) Add section ~~316~~ 506 - Revise to read:

Section ~~316.0~~ 506.0 - Fire Department Rapid Entry System.

Section ~~316.1~~ 506.1 - General. The fire official shall require all new and existing construction that is required to be equipped with an approved fire alarm system ~~that consists of smoke and/or heat detection and all buildings required to be equipped with a complete~~ or sprinkler system to have an approved key box system ~~except of 1 and 2-family dwellings thirty (30) days after approval of ordinance.~~

Section ~~316.2~~ 506.2 - Purpose. The purpose of the rapid entrance key system is to allow the fire department to gain immediate access to a building in emergency situations without forcible entry.

Section ~~316.3~~ 506.3 - Location. The approved key box shall not be located more than 5 feet above grade ~~from the adjacent grade, and shall be approved by the code official~~.

Section ~~316.4~~ 506.4 - Contents. The approved key box shall contain key, keycards, etc. as needed to gain necessary access as required by the code official.

Section ~~316.5~~ 506.5 - Alarms. At the request of the owner or lessee, the fire code official shall permit him to install a key box tamper switch connected to the building's alarm system. If the owner or lessee chooses to connect the key box to an alarm, then they shall comply with the following requirements:

1. If the building is protected by a burglar alarm system, the key box shall be connected to that system.

2. If the building is not protected by a burglar alarm system, the key box may be connected to the fire alarm providing the connection is on the trouble side signaling an alarm. Connection to the fire alarm requires the key box to be zoned separately from any fire detection and noted on the fire alarm annunciator panel as KEY BOX.

(E) Add section ~~317~~ 319 to read:

Section ~~317.0~~ 319.0 - Miscellaneous Provisions.

Section ~~317.1~~ 319.1 - Hazardous Areas - Room used for storage, boiler or furnace rooms, fuel storage, janitors' closets, and maintenance shops shall be separated from other building areas by assemblies having a fire resistance rating of not less than one hour with appropriate protection of openings into the rooms.

Section ~~317.2~~ 319.2 - Fire Evacuation Procedure Notice. Owners, managers, and agents of multiple dwelling units with more than six (6) ~~three (3) or more~~ units, motels, hotels and places of assembly, served by a common entrance, shall post and maintain in a conspicuous location within each dwelling unit and in access routes, a written notice which explains what procedures to use in the event of a fire. The notice shall contain a diagram of all fire exits.

(F) Add section ~~318~~ 320 - Packing Materials. Materials used for protective packing shall be kept in approved noncombustible containers.

Section ~~318.1~~ 320.1 - Removal Of Packing And Waste Materials. No persons shall store in any building excess amounts of combustible empty packing cases, wooden or plastic pallets, barrels, boxes, rubber tires, shavings, excelsior, rubbish, paper bags, litter, hay, straw and similar combustibles. Aisle ways and storage of the abovementioned combustibles necessary for the performance of business shall be kept in an orderly and neat manner. Combustible materials shall be removed daily or more often as is necessary to suitable vaults, bins, dumpsters, compactors or separate buildings. Such practices shall be as approved by the fire official.

(G) Section 505.1 - Address Numbers. Delete the word "alphabet." ~~In the third line from the bottom, delete "or alphabet".~~

(H) Section 806.1.1 - Restricted Occupancies. Revise to read as follows:

Natural cut trees shall only be permitted in the dwelling units of group R-2 and R-3 occupancies.

(I) Section 807.4.3.1 - Storage In Corridors And Lobbies. Delete exceptions 1 and 2.

(J) Section 807.4.4.1 - Storage In Corridors And Lobbies. Delete exceptions 1 and 2.

(K) Add to Section~~s~~ 901.7~~.1 and 901.7.2~~ to read:

Section 901.7~~.1~~ - Systems Out Of Service. Automatic fire suppression systems shall not be out of service for more than eight (8) hours for additions, alterations, maintenance or repairs without the approval of the fire official or the designated representative.

~~Section 901.7.2 - Control Valve Operator/Fire Watch. When any fire suppression system must be taken out of service, for any length of time, a responsible person shall be stationed at the control valve(s) to immediately activate the system in case of fire.~~

This is not reasonable and should be deleted. In most cases the work will be done to the sprinkler piping itself. The section that might need the water, could in fact not even be connected to the sprinkler system at the time.

(L) Section 905 - Standpipe Systems. Add the following:

Class I standpipe systems shall be installed in all buildings where any portion of the building's interior area is more than one hundred fifty (150) ~~two hundred (200)~~ feet of travel from the nearest point of fire district vehicle access.

Change made to make this section consistent with section 503.1 of the Fire Code.

(M) Add section 905.12 to read:

Section 905.12 - Standpipe Flow Switch. All standpipe systems shall have flow switches interconnected to the building fire alarm system.

(N) Section 906.1 - Where Required. Add the following:

7. Within five (5) feet of all exit doors ~~in all but group R-3 occupancies, and within seventy-five (75) feet of travel distance~~. If there are practical difficulties in locating the fire extinguisher

within five (5) feet of an exit door, then the ~~fire extinguisher shall be located as directed by the~~ code official shall designate an approved location.

(O) Revise section 907 to read:

Delete the following sections of 907: Sections 907.2.1, 907.2.2, 907.2.3 exception 3, 907.2.4, 907.2.7 exception 2, 907.2.8.1 exception 2907.2.9.1 exception 2, 907.2.10.1 exception 2.

Section ~~907~~ 907.2 - Fire Alarm And Automatic Detection Required.

Section ~~907.1~~ 907.2 - All Other Use Groups Except R-3. In all buildings with floor areas greater than two thousand (2,000) square feet, ~~automatic and manual~~ fire alarm systems shall be required and approved by the code official for the particular application ~~and shall only be used for detection and signaling in the event of fire~~. Detection devices shall be compatible with the hazards and purpose for alarm.

The newer codes allow fire alarm systems to be used for other building emergencies.

Each building which is required to be built pursuant to the ~~2006~~ 2012 international building code as adopted by the City of Darien, having a required F.A. system shall be equipped with a wireless radio connection, approved by the code official, between its automatic fire detection equipment and such appropriate dispatch station as utilized by the fire protection district or department which services the structure.

Assembly. Both new and existing educational and institutional use groups shall be equipped with an approved fire alarm system. This shall include assembly and educational uses with 20 or more occupants.

Section 907.2 - Alarm systems in use group R-1, R-2 and R-3 (except for detached single-family dwelling structures) shall comply with the following: Approved automatic fire detection ~~protection~~ shall be provided to protect new and existing multi-family buildings, which include apartments of three (3) or more units, townhouses and similar uses.

1. Approved automatic smoke detection devices wired to an activated living unit electrical circuit shall be provided in the vicinity of all bedrooms and elsewhere, based on room arrangements, in each living unit.

(a) The wiring shall allow for easy removal and replacement of the device.

(b) Each detector shall include an audible alerting device.

i. Approved fixed temperature devices shall be provided in each living unit near the kitchen and

living room areas, with not less than one installed on each floor level. These shall be part of the fire alarm system.

ii. Generally unattended areas such as storage rooms, garages, combustible unattended areas, elevator shafts, furnace rooms, basements, attic spaces, crawl spaces and similar areas shall be protected by approved heat detection devices.

iii. Approved smoke detection devices shall be provided in all public or common egress routes, including corridors, stairways, exit hallways, etc.

iv. All devices, except living unit smoke detectors (from 1. above), shall be interconnected to an approved control panel with an audible alerting system servicing all floors of the building.

v. A zone indicator panel shall be provided in any building having multiple living units, with each zone serving more than one floor.

Section ~~907.3~~ 907.1.4 - Design. The system shall be designed and installed in accordance with the National Fire Protection Association No. 72, Installation, Maintenance and Use of Protective Signaling Systems, ~~2007~~ 2010 edition, with automatic detectors designed and installed in accordance with the National Fire Protection Association.

Section ~~907.4~~ 907.6.2 - Power Supplies. A primary power supply source for the operation of the system under normal conditions shall be provided. A secondary power supply for operation of the system shall be by a U.L. approved energy device or minimum 60-hour storage battery or engine driven generator.

Section 907.5 - No alarm shall be out of service for more than 24 consecutive hours.

Section ~~907.6~~ 907.2 - Automatic Sprinklers. Where automatic sprinklers provide protection to an area, approved flow and tamper switches interconnected to the fire alarm system shall be provided.

Section ~~907.7~~ 907.6.3 - Zones. Each floor and each area over 15,000 square feet in area shall be separately zoned. Each type of system (sprinkler, halon, alarm, etc.) shall be separately zoned.

Add Section ~~907.8~~ 907.6.3.3 - Each sprinkler system need only be zoned per floor for a flow alarm.

Add Section ~~907.9~~ 907.10 - The fire protection district shall have access at any time of the day or night to the fire alarm control panel without entering an individual living (dwelling) unit. The

fire alarm panel must be installed in an approved climate controlled, weather protected closet with 24-hour access from the exterior of the building.

(P) Add section 915 to read:

Section 915 - Fire Hydrant Locations.

Section 915.1 - Fire Hydrant Locations. Water supplies shall be delivered under pressure to fire hydrants located as follows:

1. Fire hydrants shall be located along public streets, fire lanes, or access routes so that no portion of the building will be over 250 feet from a public fire hydrant. Where this is not possible, additional hydrants shall be located on the premises and be accessible to motorized fire apparatus.

2. In apartments, townhouses, condominiums, town/row or cluster housing areas where streets or parking lots dead end, hydrants shall be placed along the access route at a location approved by the fire official.

3. At least two (2) fire hydrants shall be located within 300 feet of the building.

4. Hydrants should be so located that:

a. Hydrants will be located approximately ten (10) feet from all weather roadways. If this cannot be done, the closest part of the hydrant shall be set back at least two (2) feet from the curb.

b. Hydrants shall not be located further than 75 feet from any fire department sprinkler or standpipe connection as determined by the code official.

c. Hydrants shall not be located closer than 25 feet to a building.

d. Hydrant outlets shall be a minimum of 18 inches but not more than 36 inches above the finished grade.

e. Access to fire hydrants shall be all-weather roadways adequate in width, clearance and strength for fire fighting purposes. Such routes including private roadways, shall be maintained accessible during all seasons of the year.

5. Fire hydrants used in conjunction with water supplies shall have two ($2^1/_2$) inch and one ($4^1/_2$) inch outlets with auxiliary gate valves on the hydrant branch line. Threads shall be American National Standard. Pumper outlets shall face roadways.

6. Fire hydrants shall be protected from accidental damage by approved methods when located in areas subject to vehicular damage.

(Q) Section ~~1006.3 Illumination Emergency Power~~ 1006.1.1 Emergency Power for Illumination - revise to read as follows:

Emergency lighting shall be equipped with power supplies from an independent, approved reliable source (battery or automatic starting generator). Emergency lighting shall be provided in all rooms and spaces over 2,000 square feet in area, or in rooms with an occupancy load of 20 or more. When required, emergency lighting shall be installed in stairways, corridors, access routes and other exit components. Multi-family building - emergency lighting will be required in all existing and new multi-family buildings in stairways, corridors, exit access and other exit components.

(R) Add section ~~1004.10~~ 1021.1.1 - Number And Location Of Exits. All rooms or spaces with accommodations for 20 or more persons or over 2,000 square feet in area and each floor shall have 2 separate means of egress.

(S) Add section ~~3308.12~~ 5600.1 - to read:

Section ~~3308.12~~ 5600.1 - Bond And Responsibility. Bond and responsibility for fireworks display and discharge requires "public liability insurance" in the amounts of not less than $1,000,000.00 bodily injury and $250,000.00. The City of Darien and the local fire protection district shall be added as an "additional insured."

(T) Add section ~~3406.9~~ 5706.9 - to read:

Section ~~3406.9~~ 5706.9 - Special Dispensers. Special type dispensers such as coin, key or card-operated devices, for self service operation by the general public are prohibited unless there is an attendant on duty at all times.

(U) ~~Delete sections 803.4.3.1.1 and 803.4.3.1.2.~~

~~(V) Chapter 45, Reference Standards: Revise the NFPA standard reference numbers as follows:~~

~~From 13-02 to 13-07~~
~~From 13D-02 to 13D-7~~

~~From 13R-02 to 13R-07~~

4-1-8-3: DEFINITIONS AND ADDITIONAL REGULATIONS OF INTERNATIONAL FIRE CODE:

(A) Definitions:

1. Fire Prevention Code Or Code: Wherever the words "fire prevention code" or "code" are used in the codes adopted herein by reference, they shall be held to mean the City of Darien ~~2006~~ 2012 international fire code.

2. Municipality: Wherever the word "municipality" is used in the codes adopted herein by reference, it shall be held to mean the City of Darien.

3. City: Wherever the word "city" is used in the codes adopted herein by reference, it shall be held to mean the City of Darien.

4. Corporation Counsel: Wherever the term "corporation counsel" is used in the codes adopted herein by reference, it shall be held to mean the legal counsel for the City of Darien.

5. Fire Official, Code Official, Fire Marshal, Authority Having Jurisdiction Or Chief Of The Bureau Of Fire Prevention: Wherever the term "fire official", "code official", "fire marshal", "authority having jurisdiction" or "chief of the bureau of fire prevention" is used in the codes adopted herein by reference, it shall be held to mean the director of community development or his designee.

6. Bureau Of Fire Prevention: Wherever the term "bureau of fire prevention" is used in the codes adopted herein by reference, it shall be held to mean department of community development.

(B) Administrative Bodies:

1. The fire prevention code shall be enforced by the department of community development of the city.

2. The person in general charge of the department of community development shall be the director of community development.

3. The director of the community development department may detail additional personnel as inspectors to assist in enforcing this chapter.

~~(C) Application Of Provisions: Except as stated elsewhere in this chapter, any existing building and/or structure shall be brought into compliance with all applicable provisions of the fire prevention code in the following situations:~~

~~1. If the structure or building is increased in floor area or in height, the entire structure or building shall be made to conform with the requirements of this chapter.~~

~~2. If any portion is changed in occupancy, that portion separated by approved fire rated construction shall be made to conform with the requirements of this chapter.~~

~~3. If any portion is altered or remodeled costing in excess of fifty percent (50%) of the fair market value of the building or structure, such building or structure shall be made to conform to the requirements of this chapter.~~

~~4. If a building or structure is damaged by fire or other cause to the extent in excess of fifty percent (50%) of the fair market value before the damage was insured, the entire structure or building (exclusive of foundation) shall meet the requirements of this chapter.~~

The above section was a loop hole that allowed some commercial buildings to be altered without providing sprinklers, that otherwise, would have been required.

~~(D)~~ (C) Permits And Approvals:

1. Special Permits: Where special permits are required, application shall be made to the director of the department of community development. The director shall determine criteria, limitations and duration of permits until the appropriate requirements are met.

~~(E)~~ (D) Explosives And Blasting Agents:

1. The storage, handling and use of explosives and blasting agents is prohibited within the city.

(a) Exception: By special permit from the director of the department of community development.

~~(F)~~ (E) Flammable Liquids; Liquefied Petroleum Gases:

1. The storage of flammable liquids in outside aboveground tanks is prohibited.

(a) Exception: By special permit from the director of the department of community development.

2. The bulk storage of liquefied petroleum gases in excess of one thousand (1,000) gallons water capacity is prohibited.

(a) Exception: By special permit from the director of the department of community development.

~~(G)~~ (F) Manufacturing And Storage Of Fireworks Prohibited: The manufacture and storage of fireworks is prohibited within the corporate limits of the city, except by special permit issued by the code official.

~~(H) Motor Vehicle Routes For Vehicles Transporting Hazardous Chemicals Or Other Dangerous Articles, Including Liquefied Petroleum Gases And Combustible And Flammable Liquids: The routes referred to in section 20.14 of the fire prevention code for vehicles transporting hazardous chemicals and other dangerous articles are hereby established as routes approved by state, county or federal governments.~~

~~No tank vehicles shall be parked for over one hour or left unattended at any time.~~

~~(I)~~ (G) Emergency Conditions: When in the opinion of the director of the department of community development or his designee there is actual and immediate danger because of hazardous conditions which endanger life or may cause effects upon adjoining properties, the bureau may order the building to be immediately vacated and cause immediate remedial action if necessary. The cost of such remedial action shall be borne by the owner of the premises.

~~(J)~~ (H) Modifications: The director of the department of community development and the city administrator shall have power to modify any of the provisions of the fire prevention code upon application in writing by the owner or lessee, or his duly authorized agent, when there are practical difficulties in the way of carrying out the strict letter of the code; provided that the spirit of the code shall be observed, public safety and substantial justice done. The particulars of such modification, when granted or allowed, and the decision of the fire marshal shall be entered upon the records of the department and a signed copy shall be furnished the applicant.

~~(K)~~ (I) New Materials, Processes Or Occupancies Requiring Permits: Upon a written request to employ new materials, processes or occupancies which require a permit or otherwise alter the provisions of the fire code, in addition to those now enumerated in said code, the director of community development shall forward said request along with supporting documentation and other applicable information as determined by the director of community development and city administrator to the building plan review and building inspection consultants employed by the city, to the local fire district and when applicable, to the city engineer, for their review and recommendation. Upon receipt of the recommendations from these sources, the director of community development and city administrator shall either approve or deny said request. In

either situation, the determination made shall be posted in a conspicuous place at the Darien city hall, and copies shall be distributed to all parties.

~~(L)~~ (J) Penalties: The penalty for violation of this code shall be in accordance with the city code penalty section.

4-1-9: INTERNATIONAL ENERGY CONSERVATION CODE:

4-1-9-1: ADOPTION OF INTERNATIONAL ENERGY CONSERVATION CODE:

There is hereby adopted and incorporated by reference as part of this section, the code entitled "2012 international energy conservation code", printed in pamphlet form by the International Code Council, including no errata sheets inserted therein as modified in certain respects as set forth herein, three (3) copies of which are on file in the office of the city.

4-1-9-2: AMENDMENTS TO CODE:

(A) Section 101.1 – Insert City of Darien for [name of jurisdiction].

~~4-1-9~~ 4-1-10: EXISTING STRUCTURES REGULATIONS:

~~4-1-9-1~~ 4-1-10-1: ADOPTION OF INTERNATIONAL PROPERTY MAINTENANCE CODE:

There is hereby adopted and incorporated by reference as part of this section, the code entitled "~~2006~~ 2012 international property maintenance code", printed in pamphlet form by the International Code Council, including no errata sheets inserted therein as modified in certain respects as set forth herein, three (3) copies of which are on file in the office of the city.

~~4-1-9-2~~ 4-1-10-2: AMENDMENTS TO CODE:

The international property maintenance code, as adopted in section 4-1-9-1 of this chapter shall be amended as follows:

(A) Section 101.1 - Insert "City of Darien for [name of jurisdiction].

(B) Section 106.4 - Penalties. Revise to read as follows:

See the city code of Darien for penalties for violations of the provisions of this code.

~~4-1-10~~ 4-1-11: PERMITS AND FEES:

~~4-1-10-1~~ 4-1-11-1: PERMIT REQUIRED; ISSUANCE:

A building permit, as provided for herein, shall first be required before any construction, alteration, repair or removal within the city shall be commenced. No work shall be done and no permit as required by these regulations shall be issued until the fee prescribed therefore has been paid and all other requirements for such permit have been met.

~~4-1-10-2~~ 4-1-11-2: GENERAL REQUIREMENTS:

(A) Plat Of Survey With Application: A plat of survey shall be submitted with a building permit application. The plat of survey shall be prepared by a registered land surveyor of the state of Illinois and include topographical data showing existing contours at vertical intervals of not less than two feet (2'), proposed changes in contours, proposed foundation and elevations and other land improvements within the platted property and surrounding properties. Topographical data shall refer to true USGS elevation standards.

(B) Spotted Survey Required: Two (2) copies of a spotted survey will be required within fourteen (14) days after the foundation is placed on the lot. The spotted survey shall include the true USGS elevations of the top of foundation wall and existing grade of curb, sidewalk or existing grade of street or roadway. It shall also include all building setbacks from the property boundaries. No construction will be permitted past the decking over the foundation except for water, sanitary sewer and related items unless such survey has been filed and approved by the department of community development staff.

(C) Final Grading Survey Required: Two (2) copies of a final grading survey will be required no less than four (4) days prior to the request for final occupancy. The final grading survey shall include topographical data showing final contours at vertical intervals of not less than two feet (2') based on true USGS elevation standards. A certificate of occupancy will not be issued until the final grading survey is approved by the city engineer.

In any residential zoning district, no permit may be issued for additional work if there remains uncompleted other work on the premises for which a building permit has been issued for more than twelve (12) months.

(D) Duration Of Permits:

1. Duration: The duration of a building permit shall be one year from the date of issuance.

2. Permit Extensions: Upon approval of the building official, a building permit may be extended for a period not to exceed six (6) months on payment of fifty percent (50%) of the original building permit fee.

3. One Permit Limit: No more than one building permit shall be issued for a property unless construction required under the first building permit continues at a reasonable level.

4. Suspension Of Permit: Any building permit issued, but under which no work has commenced within six (6) months after issuance of the permit, or if the authorized work is suspended or abandoned for a period of six (6) months after the time of commencing, the permit shall expire by its own terms. The permit must be surrendered to the building inspector within ten (10) days after its expiration, and fees paid therefore shall be forfeited to the city. Upon such surrender, fifty percent (50%) of the total permit fee shall be refunded.

(E) Contractor Registration Requirements:

1. All contractors~~, except electrical and plumbing contractors,~~ shall obtain a city contractor's license. This shall include all subcontractors. The Darien contractor's license year runs from May 1 to April 30. There is an annual fee with a one-half ($^1/_2$) year fee after November 1.

2. Electrical contractors shall give evidence of good standing by supplying a copy of the registration with any other city, county or state jurisdiction in Illinois.

3. Plumbing contractors must be licensed with the state of Illinois and shall submit a copy of their license. ~~Plumbing contractors doing sewer work shall be required to obtain a contractor's license.~~

4. Roofing contractors must be licensed with the state of Illinois and shall submit a copy of their license ~~and shall be required to obtain a contractor's license~~.

5. All contractors ~~including plumbing, electrical and roofing contractors~~ , except for plumbers, roofers, lawn sprinkler and fire alarm contractors, shall submit the following to the city:

(a) A ten thousand dollar ($10,000.00) license bond. The general contractor may submit a twenty thousand dollar ($20,000.00) license bond in lieu of separate bonds on each subcontractor.

(b) A certificate of liability insurance.

(c) $60.00 annual fee.

The above changes reflect current practice as well as changes in State law.

6. License bond requirement may be waived where the owner of a single-family house is acting as a general contractor.

(F) Construction Vehicle Driveways: For any construction which does not include a hard surface for construction vehicles, a stone driveway must be laid within five (5) days of the placement of a foundation on a property.

(G) Erosion Control Devices: Erosion control devices such as silt fencing or hay bales shall be erected around the perimeter of any property under construction which includes earthwork.

(H) Sidewalk Construction Required Along Major Arterial Streets:

1. The city shall not issue any building permits for construction taking place along "major arterial streets", as defined hereafter, unless the applicant for the building permit and the owner of the property shall execute an acknowledgement that no occupancy permit for the building or structure will be issued unless sidewalks, constructed in accordance with the ordinances of the city, are installed along such major arterial streets prior to the occupancy of the building or structure. In lieu of the installation of the sidewalk prior to occupancy, and at the option of the city, the owner of the property may post a cash deposit with the city equal to the then current cost of installing the sidewalk or such other security acceptable to the city. This cash sum or other security shall be retained by the city until such time as it is most convenient for the city to install or to have installed such sidewalk segment either singly or as part of a larger sidewalk construction program. If, at the time the sidewalk is eventually installed, the cost of installing the sidewalk shall exceed the amount of the cash sum or other security posted, the owner shall be obligated, upon thirty (30) days' written notice, to increase the amount of that cash sum or other security in an amount sufficient to enable the city to install or to have installed the sidewalk. In the event that the cost of installing the sidewalk shall be less than the cash sum or other security deposited with the city, the amount of such excess will be returned to the owner after the sidewalk is installed and all costs for the installation of the sidewalk have been paid.

2. For the purpose of this subsection, "major arterial streets" within the city shall be defined as follows:

(a) Route 83.

(b) Clarendon Hills Road.

(c) Plainfield Road.

(d) Cass Avenue.

(e) 75th Street.

(f) Bailey Road.

(g) North and South Frontage Roads.

(h) Manning Road.

(i) Lemont Road.

(j) 83rd Street.

3. Any person who violates any provision of this subsection (H) shall upon conviction thereof be fined not less than fifty dollars ($50.00) nor more than five hundred dollars ($500.00). Every day upon which a violation of this subsection (H) takes place shall be deemed to be a separate offense.

(I) Permitted Hours Of Construction:

1. No construction for which a building permit is required under this chapter shall commence before the hour of six thirty o'clock (6:30) A.M. or continue after the hour of ten o'clock (10:00) P.M. on Monday through Friday, or commence before the hour of seven thirty o'clock (7:30) A.M. or continue after the hour of ten o'clock (10:00) P.M. on Saturday or Sunday.

2. Any person who violates any provision of this subsection (I) shall be fined not less than fifty dollars ($50.00) nor more than five hundred dollars ($500.00) for a first offense. Any person who violates any provision of this subsection (I) a second or subsequent time shall be fined not less than one hundred dollars ($100.00) nor more than five hundred dollars ($500.00). In addition, violation of this provision may be deemed cause for revocation of the building permit. (Ord. 0-11-07, 4-2-2007)

~~4-1-10-3~~ 4-1-11-3: PERMIT FEES:

(A) Plan Review Fees: Plan review fees are accessed through outside professional services.

Single-family residence	$315.00
Residential additions	215.00
Detached garage	115.00

Multi-family residence	315.00 per dwelling unit
Basement remodeling, deck, shed, etc.	115.00
Commercial, office, industrial	0.003 x construction cost as determined by the most current publication of the "Means Cost Estimating Guide"
Elevators, escalators, dumbwaiters, platform lifts	100.00
Parking lots	100.00
Sign permits	50.00
Resubmittals	65.00 for each

The city reserves the right to employ outside review of any and all plans submitted and the cost of such review will be paid by the applicant.

(B) Construction Permit Fees:

1. Computing Fees: For the purposes of computing fees, all subordinate detached buildings, the use of which is clearly related to that of the main building located on the same plot, shall be considered to constitute a part of the main building when included in the same application for a building permit or when a permit is obtained for the detached subordinate building or buildings before occupancy of the main building.

2. Building Permit: The building permit fee for all new construction, additions, and alterations shall be based on the estimated cost of construction including all structural, electrical, plumbing, mechanical interior finish and site preparation elements. The following table sets forth said fees:

Construction Cost	Fee
$0.00 - $8,000.00	$75.00
$8,001.00 - $15,000.00	150.00
$15,001.00 - $20,000.00	200.00
$20,001.00 - $25,000.00	250.00
$25,001.00 - $35,000.00	500.00
$35,001.00 - $50,000.00	750.00
$50,001.00 - $75,000.00	1,000.00
$75,001.00 - $100,000.00	1,250.00

$100,001.00 - $150,000.00	1,500.00
$150,001.00 - $200,000.00	2,000.00
Over $200,000.00	2,500.00 + 10.00/$1,000.00

3. Plumbing Permits: A separate plumbing permit shall be required when plumbing work is not performed in connection with a required building permit for new construction, alterations, additions, repairs or accessory uses. The plumbing permit fee shall be based on the following schedule:

Residential	$~~10.00 per fixture~~ $50.00
Nonresidential	~~20.00 per fixture~~ $50.00

This change reflects current practice.

4. Electrical Permits: An electrical permit shall be required when electrical work is not performed in connection with a required building permit for new construction, alterations, additions, repairs or accessory uses. The electrical permit fee shall be based on the following schedule:

Residential	$~~3.00 per outlet plus 10.00 per circuit~~ 50.00
Nonresidential	~~3.00 per outlet plus 10.00 per circuit~~ 50.00

This change reflects current practice.

5. Elevator Permits:

Elevator	$50.00
Escalator	50.00
Dumbwaiter	30.00
Movable stage or orchestra floor	50.00
Platform lift	50.00
Hinged platform lift	50.00

All existing elevators shall be inspected annually, at the cost of the property owner.

6. Permits For Tanks For Flammable Liquids:

Class 1 and 2 (1,000 gallon capacity) Each 100 gallons or fraction thereof over 1,000	$50.00 Add $2.00

Class 3 and 4 (550 gallons or less) Each additional 1,000 gallons or fraction thereof over 550	$40.00 Add $2.00

7. Other Permits Which May Require Plan Review Fee:

Fire protection systems, including, but not limited to, range hoods, sprinklers, alarms	$ 50.00
Heating system/furnace	50.00
Residential air conditioner	50.00
Commercial conditioner	150.00
Building demolition:	
500 square feet or less	50.00
Over 500 square feet	100.00
Tank removal	100.00
Swimming pool:	
Aboveground	50.00
Inground	100.00
Fence	25.00
Deck	50.00
Satellite dish	50.00

Detached garage:	
Up to 800 square feet	100.00
Shed:	
100 to 800 square feet	50.00
Steam boiler	75.00
Incinerator (state approved):	
5 square feet or less	50.00
Each additional 5 square feet	5.00
Driveways/parking lots:	
Residential	~~25.00~~ 50.00 for private portion of driveway; 75.00 for private and work within street right-of-way
Nonresidential	~~50.00~~ 100.00
Other permits	50.00

This change reflects current practice.

8. Sign Permits: The erection, construction or alteration of any sign, or its advertising structure, marquee, canopy or awning, requires a sign permit based on the following schedule:

Nonilluminated signs (unless temporary) plus $1.00 per square foot of gross surface area of each face thereof	$100.00
Temporary signs	35.00
Marquees, canopies and awnings plus $0.20 per square foot of gross surface area	20.00

Illuminated signs plus $2.00 per square foot of gross surface area of each face thereof	200.00
Reface of existing sign	100.00
Permanent residential development sign as described in subsection 4-3-10(A)3 of this title	No charge

9. Other Fees:

Reinspection:	
First occurrence	$ 80.00
Second occurrence	100.00
Work started without permit	2 times standard fee
Final occupancy	$ 50.00
Violation of building code:	
First offense	100.00
Subsequent offense	200.00
Elevator inspection	50.00

(C) Independent Inspectors: The city may, from time to time, hire an independent inspector to make inspections which cannot be performed by the staff building inspectors. The cost of said inspections shall be paid by the builder.

(D) Reinspections: Whenever a reinspection is required, due to inaccurate information or construction, an additional fee of eighty dollars ($80.00) shall be charged for the first reinspection. A one hundred dollar ($100.00) fee shall be charged for each additional reinspection after the first reinspection. This fee shall be payable prior to the reinspection being performed.

(E) Failure To Receive Required Inspection: If a builder fails to receive a required inspection and continues to work, there shall be a one hundred dollar ($100.00) fee. A building inspector may require removal of any unauthorized work in order to adequately make a required inspection.

(F) Work Started Without A Permit: Whenever work for which a permit is required is commenced without a permit, the applicant shall pay the following additional fees:

Fifty dollars ($50.00) for the first three thousand dollars ($3,000.00) of construction cost, and twenty dollars ($20.00) per one thousand dollars ($1,000.00) of additional cost of construction in order to reimburse the city for clerical, inspection and other administrative expenses.

(G) Permit Pick Up: Building permits must be picked up within sixty (60) days of approval. If a permit is not picked up within sixty (60) days, it will become null and void and the applicant will be charged the applicable plan review fee.

(H) Temporary Certificate Of Occupancy (Valid For A Period Not To Exceed 120 Days):

Residential	$100.00 plus cash bond for cost of outstanding work
Commercial	150.00 plus cash bond for cost of outstanding work

In addition, the seller/owner of any property for which a temporary certificate of occupancy is sought shall post the following sums to ensure the completion of incomplete items as follows:

Site grading	$5,000.00
Sidewalk	15.00 per square foot
Concrete driveway approach/private driveway	15.00 per square foot
Asphalt driveway approach/private driveway	10.00 per square foot
Private landscaping	4,000.00
Public landscaping, infrastructure, storm sewer, storm sewer structure and water valves	3,000.00

Such sums shall be released upon the issuance of a final certificate of occupancy. In the event all or a portion of said work is not completed by the expiration of the prescribed period of not to exceed one hundred twenty (120) days, the city may, in its discretion, release such funds to the property owner or cause uncompleted work to be completed.

(I) Final Certificate Of Occupancy: $50.00

~~4-1-10-4~~ 4-1-11-4: DUPAGE COUNTY FAIR SHARE TRANSPORTATION IMPACT FEE:

In addition to any other requirements of this code, no building permit or occupancy permit shall issue for improvements subject to the requirements of the DuPage County fair share transportation impact fee ordinance, county ordinance OTD-021-89, as said ordinance may be amended from time to time, until the applicant for such permit furnishes the city with a copy of a receipt of payment of DuPage County's impact fee.

4-1-10-5: REDUCED FEES WHEN APPLICATION MADE BY LOCAL GOVERNMENT BODY:

(A) Whenever a local governmental body (school district, library district, fire protection district, park district, community college district, county, forest preserve) makes application for work for which a permit fee is required pursuant to this title or any other title of this code, the permit fee will be reduced by a percentage equal to the percentage that such governmental body's taxable property, as determined by the most recent assessed valuation, is also taxable property within the City of Darien. For example, if ninety five percent (95%) of a local governmental body's assessed valuation is located within the City of Darien, then the permit fee shall be reduced by ninety five percent (95%).

(B) Local governmental permit applicants shall be required to pay or reimburse the city for any actual expenses (such as consultant plan review fees) incurred by the city as part of the city's permit application review.

(C) Local governmental permit applicants shall provide the City of Darien with sufficient information showing the assessed valuation calculation in order to have a permit fee reduction.

~~4-1-11~~ 4-1-12: REMOVAL OF CERTAIN IMPROVEMENTS IN BUSINESS DISTRICTS:

~~4-1-11-1~~ 4-1-12-1: REMOVAL OF PERSONAL PROPERTY:

Whenever any improved property located in one of the city's business districts has been out of operation for more than three (3) months, the owner of the property shall remove the following items of personal property there from:

(A) Freestanding signage;

(B) Canopies or canopy superstructures (specifically in the case of automobile service stations);

(C) Directional signage;

(D) Accessory structures, dumpsters;

(E) Gasoline pumps.

~~4-1-11-2~~ 4-1-12-2: CONTACT PERSON; ADDITIONAL INFORMATION:

At the direction of the city the owner and/or authorized agent of any business referred to hereinabove shall provide the city with the following information:

(A) Name, address, daytime and emergency phone number of responsible parties;

(B) Good faith estimate of time building is expected to remain vacant;

(C) Status of any compliance measures required by other governmental agencies, including, but not limited to, the Illinois environmental protection agency and Illinois state fire marshal office.

The information provided above shall be updated on a quarterly basis. (Ord. 0-36-06, 8-21-2006)

~~4-1-11-3~~ 4-1-12-3: ONGOING MAINTENANCE:

The owner of any such abandoned building shall maintain landscaping on the grounds, including the parkway, in a reasonable condition, in compliance with all city ordinances regarding maintenance and outdoor landscaping. All buildings shall be secured. Debris, graffiti, abandoned vehicles, and garbage shall be removed from the property within forty eight (48) hours' notice by the city.

4-1-11-4: PENALTY; REMOVAL; LIEN:

Any owner of property who fails to remove the improvements identified herein within fourteen (14) days of notice from the city, and who fails to maintain the property in accordance with the provisions of this section 4-1-11 shall be subject to a fine of not less than one hundred dollars ($100.00) and not more than seven hundred fifty dollars ($750.00). Each day's violation shall be considered a separate offense. The city may enter upon the property to cause the removal of the structures which are maintained on such property in violation of this provision. In such case the city's costs, along with a reasonable administrative fee, shall operate as a lien against that property. In such case, the city administrator shall cause a notice of lien to be filed against the property in the office of the DuPage County recorder of deeds.

AGENDA MEMO
Municipal Services Committee
December 12, 2012

Issue Statement

Approval of a resolution authorizing the Mayor to enter into an engineering agreement with Christopher B. Burke Engineering for pavement corings for the proposed 2013 Street Maintenance Program, in an amount not to exceed $13,750.00.

Background/History

Attached, please find an engineering agreement with Christopher B. Burke Engineering for a pavement study consisting of 73 pavement corings for the tentatively proposed 2013 Street Maintenance Program. The following roads have been slated for the 2013 Street Maintenance Program:

PROPOSED 2013 ROAD PROGRAM

Street Name	Rating	Subdivision	Limit	Most Recent Rehab	Road Length
*/** Roger Road	66	Marion Hills N	Clarendon Hills to Plainfield	1999	1120
* Eleanor Place	66	Marion Hills N	69th to Holly	1997	1050
* Brookbank Avenue	66	Marion Hills N	69th to Holly	1997	1150
Woodvale Dr	66	Farmingdale Village	Beller to 87th	1997	1270
Highcrest Dr	66	Farmingdale Village	Beller to Hillside	1997	765
Beller Ct	66	Farmingdale Village	Beller to Limit	1997	485
Dunmore Dr	66	Tara Hill	Kilkenny to dead end	1995	1000
Tara Hill Rd	65	Tara Hill	Dunmore to Carlow	1995	1300
Carlow Dr	65	Tara Hill	Tara Hill to Andrus	1995	1500
Brandon Rd	65	Tara Hill	Carlow to Middleton	1995	1060
Kerry Ln	66	Tara Hill	Tara Hill to Brandon	1995	660
Middleton Rd	65	Tara Hill	Kerry to Dunmore	1995	1060
Kilkenny Dr	66	Tara Hill	Brandon to Dunmore	1995	1200
Creekside Ln	66	Brookeridge	Kearney to Dead End	2001	2500
Carriage Green Dr (entrance)	66	Carriage Green 1-2	Frontage to Old Oak	1999	200
Carriage Green Dr (entrance)	67	Carriage Green 1-2	Frontage to Old Oak	1999	200

Street Name	Rating	Subdivision	Limit	Most Recent Rehab	Road Length
Carriage Green Dr	66	Carriage Green 1-2	Old Oak to Coachman's	1999	1440
Carriage Green Dr	67	Carriage Green 1-2	Coachman's to Heather	1999	1260
Gleneyre Rd	65	Carriage Green 1-2	Heather to Coachman's	2002	1100
Heather Ln	67	Carriage Green 1-2	Carriage Green to Gleneyre	2002	800
** Coachman's Rd	69	Carriage Green 1-2	Carriage Green to Dead End	2002	880
Dorchester Ln	66	Farmingdale Ter N	79th to Somerset	1997	615
Somerset Ln	66	Farmingdale Ter N	Dorchester to Mayfair	1997	335
Mayfair Ln	66	Farmingdale Ter N	79th to Somerset	1997	615
Redondo Court	66	Knottingham	Redondo Dr to Redondo Dr	1994	409
Florence Ave	65	Knottingham	Manning to Limit	1996	1250
Center Cir	65	Knottingham	Florence to Dead End	1999	190
Gordon Ct	65	Knottingham	Florence to Dead End	1999	190
Wilcox Avenue	67	Farmingdale 5-9	71st to McAdam	1998	625
McAdam Rd	67	Farmingdale 5-9	Wilcox to Holly	1994	980
** Howdy Ln	67	Downers Fairview	Wirth to Gold Grove	1997	540
Richard Rd	67	Downers Fairview	72nd to Gigi	1999	720
Greenbriar Ln	67	Farmingdale South	Bailey to Grant	1997	1200
** Iroquois St	67	Farmingdale South	Cass to Adams	1997	980
** Grant St	67	Farmingdale South	Greenbriar to Sleepy Hollow	1999	660
** Grant St (CDS)	70	Farmingdale South	Grant St to Limit	2000	300
Sweetwater Ct	66	Hidden Lakes	Hinswood to Limit	1995	400
LINEAL FEET					32009
MILES-OPTION 1					6.06
** MILES-OPTION 2					5.21
Darien Park District-Parking Lot	N/A	4 Cores	802 Plainfield Rd REIM FROM PARK DISTRICT		N/A
Water Plant 3	N/A	4 Cores	1930 Manning Rd Budget Pending		N/A

* Pending Ditch project approval
** Proposed Roadways to be postponed pending Budget and/or bid results

The proposed Engineering Agreement includes the following scope of services:

Task 1 – Geotechnical Investigation: A Geotechnical Investigation will be performed by CBBEL's sub consultant, Testing Services Corporation (TSC). The Geotechnical Investigation will include soil borings (73 cores) and pavement cores at a frequency to determine the existing structure of the pavement and condition of subgrade materials. Due to concern of the depth of existing pavement thickness staff recommends TSC completes the geotechnical report to verify the existing thickness of the bituminous pavement. This will allow staff and CBBEL to verify that the correct improvement is proposed for the roadways.

Total Engineering Cost for Task 1 - $13,000.00

Task 2 – Evaluation of Geotechnical Report: CBBEL and City Staff will evaluate the geotechnical report to determine the resurfacing treatment for each street and the list of streets to be included in the 2013 Road Program. The evaluation will be performed as per the established hourly rates at a not to exceed amount of $750.00.

Total Engineering Cost for Task 2 - $750.00

Below, please find a summary cost for the abovementioned items:

Cost for Task 1-	$13,000.00
Cost for Task 2-	750.00
Total Cost	$13,750.00

Funding for the Engineering Services would be expended from the following line item of the FY 13 Budget:

ACCOUNT NUMBER	ACCOUNT DESCRIPTION	FY 12/13 BUDGET	PROPOSED EXPENDITURE	PROPOSED BALANCE
01-30-4325	ROAD CORE SPECS/TESTING SERVICES	$13,600.00	$ 12,243.40	$ 1,356.60
25-35-4856	DARIEN PARK DISTRICT REIM SPECS/TESTING SERVICES	N/A	$ 753.30	N/A
02-50-4325	PLANT NO 3 SPECS/TESTING SERVICES	$ 5,000.00	$ 753.30	$ 4,246.56

Staff Recommendation

Staff recommends approval of this Engineering Agreement through the attached resolution with Christopher B. Burke Engineering in an amount not to exceed of $13,750.00.

Alternate Consideration

Not approving the agreement.

Decision Mode

This item will be placed on the December 17, 2012 City Council agenda for formal consideration.

RESOLUTION NO._____

A RESOLUTION AUTHORIZING THE MAYOR TO ENTER INTO AN ENGINEERING AGREEMENT WITH CHRISTOPHER B. BURKE ENGINEERING, LTD. FOR PAVEMENT CORINGS FOR THE PROPOSED 2013 STREET MAINTENANCE PROGRAM IN AN AMOUNT NOT TO EXCEED $13,750.00

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF DARIEN, DU PAGE COUNTY, ILLINOIS, as follows:

SECTION 1: The City Council of the City of Darien hereby authorizes the Mayor to enter into an engineering agreement with Christopher B. Burke Engineering, Ltd., for pavement corings for the proposed 2013 Street Maintenance Program in an amount not to exceed $13,750.00, a copy of which is attached hereto as "Exhibit A" and is by this reference expressly incorporated herein.

SECTION 2: This Resolution shall be in full force and effect from and after its passage and approval as provided by law.

PASSED BY THE CITY COUNCIL OF THE CITY OF DARIEN, DU PAGE COUNTY, ILLINOIS, this 17th day of December, 2012.

AYES: _____

NAYS: _____

ABSENT: _____

APPROVED BY THE MAYOR OF THE CITY OF DARIEN, DU PAGE COUNTY, ILLINOIS, this 17th day of December, 2012.

_____
KATHLEEN MOESLE WEAVER, MAYOR

ATTEST:

_____
JOANNE E. RAGONA, CITY CLERK

APPROVED AS TO FORM:

_____
CITY ATTORNEY

Exhibit A

CHRISTOPHER B. BURKE ENGINEERING, LTD.
9575 West Higgins Road Suite 600 Rosemont, Illinois 60018 TEL (847) 823-0500 FAX(847) 823-0520

Revised November 30, 2012
November 19, 2012

City of Darien
City Hall
1702 Plainfield Road
Darien, Illinois 60561

Attention: Dan Gombac

Subject: Proposal for Professional Engineering Services
2013 Road Program

Dear Dan:

At your request, we are providing this proposal to provide professional engineering services related to the preparation of the bidding documents for the City's 2013 Road Program. Included below you will find our Understanding of the Assignment and Scope and Fee.

UNDERSTANDING OF THE ASSIGNMENT

Based on the information provided by the City, the preliminary list for the 2013 Road Program will consist of the following streets:

PROPOSED 2013 ROAD PROGRAM		
STREET	**ROAD LENGTH**	**CORES**
Roger Road	1120	2
Eleanor Place	1050	2
Brookbank Avenue	1150	2
Woodvale Dr.	1270	2
Highcrest Dr	765	2
Beller Ct.	485	1
Dunmore Dr.	1000	2
Tara Hill Rd.	1300	3
Carlow Dr.	1500	3
Brandon Rd.	1060	2
Kerry Ln.	660	1
Middleton Rd.	1060	2

Kilkenny Dr.	1200	2
Creekside Ln.	2500	5
Carriage Greens Dr. (entrance)	200	1
Carriage Greens Dr. (entrance)	200	1
Carriage Green Dr.	1440	3
Carriage Green Dr.	1260	3
Gleneyre Rd.	1100	2
Heather Ln.	800	2
Coachmans Rd.	880	2
Dorchester Ln.	615	1
Somerset Ln.	335	1
Mayfair Ln.	615	1
Redondo Court	409	1
Florence Ave.	1250	2
Center Cir	190	1
Gordon Cr.	190	1
Wilcox Avenue	625	1
McAdam Rd	980	2
Howdy Ln	540	1
Richard Rd.	720	1
Greenbriar Ln.	1200	2
Iroquois St.	980	2
Grant St.	660	1
Grant St. (CDS)	300	1
Streetwater Ct.	400	1
LN FEET	32,009	65
MILES	6.1	
Darien Park District – Parking Lot		4
Water Plant 3		4
Total		73

SCOPE AND FEE

Task 1 – Geotechnical Investigation: A Geotechnical Investigation will be performed by CBBEL's subconsultant, Testing Services Corporation (TSC). The Geotechnical Investigation will include soil borings (approximately 73 cores) and pavement cores at a frequency to determine the existing structure of the pavement and condition of subgrade materials. Due to concern of the depth of existing pavement thickness we would recommend TSC completing the geotechnical report to verify the existing thickness of the bituminous pavement. This will allow us to verify that the correct improvement is proposed for the roadways. This assumes no flagman are required to take the cores.

Task 2 – Evaluation of Geotechnical Report: CBBEL and City Staff will evaluate the geotechnical report to determine the resurfacing treatment for each street and the final list of streets to be included in the 2013 Road Program based on the City's budget.

CBBEL will perform a Field Reconnaissance of the streets and preparation of the bid booklet under a separate proposal.

CBBEL estimates the following fees for each of the tasks described above:

Task 1	Geotechnical Investigation	$13,000
Task 2	Evaluation of Geotechnical Report	$ 750
	TOTAL	$13,750

We will bill you at the hourly rates specified on the attached Schedule of Charges and establish our contract in accordance with the attached General Terms and Conditions. Direct costs for blueprints, photocopying, mailing, overnight delivery, messenger services and report compilation are not included in the Fee Estimate. These General Terms and Conditions are expressly incorporated into and are an integral part of this contract for professional services. It should be emphasized that any requested meetings or additional services that are not included in the preceding Fee Estimate will be billed at the attached hourly rates.

Please sign and return one copy of this agreement as an indication of acceptance and notice to proceed. Please feel free to contact us anytime.

Sincerely,

Christopher B. Burke, PhD, PE
President

Encl. Schedule of Charges
General Terms and Conditions

THIS PROPOSAL, SCHEDULE OF CHARGES AND GENERAL TERMS AND CONDITIONS ACCEPTED FOR CITY OF DARIEN:

BY: _____

TITLE: _____

DATE: _____

CHRISTOPHER B. BURKE ENGINEERING, LTD.
STANDARD CHARGES FOR PROFESSIONAL SERVICES
JANUARY, 2012

Personnel	Charges* ($/Hr)
Principal	240
Engineer VI	210
Engineer V	173
Engineer IV	138
Engineer III	125
Engineer I/II	102
Survey V	178
Survey IV	132
Survey III	127
Survey II	100
Survey I	78
Resource Planner V	112
Resource Planner IV	108
Resource Planner III	100
Resource Planner I/II	88
Engineering Technician V	150
Engineering Technician IV	132
Engineering Technician III	107
Engineering Technician I/II	97
CAD Manager	138
Assistant CAD Manager	126
CAD II	125
CAD I	98
GIS Specialist III	120
GIS Specialist I/II	67
Landscape Architect	138
Environmental Resource Specialist V	154
Environmental Resource Specialist IV	134
Environmental Resource Specialist III	114
Environmental Resource Specialist I/II	94
Environmental Resource Technician	90
Administrative	88
Engineering Intern	53
Survey Intern	53
Information Technician III	97
Information Technician I/II	62

Direct Costs	
Outside Copies, Blueprints, Messenger, Delivery Services, Mileage	Cost + 12%

*Charges include overhead and profit

Please note: In recognition of the economic challenges facing our clients, we have not increased our schedule of charges since January 2009.

CHRISTOPHER B. BURKE ENGINEERING, LTD.
GENERAL TERMS AND CONDITIONS

1. Relationship Between Engineer and Client: Christopher B. Burke Engineering, Ltd. (Engineer) shall serve as Client's professional engineer consultant in those phases of the Project to which this Agreement applies. This relationship is that of a buyer and seller of professional services and as such the Engineer is an independent contractor in the performance of this Agreement and it is understood that the parties have not entered into any joint venture or partnership with the other. The Engineer shall not be considered to be the agent of the Client. Nothing contained in this Agreement shall create a contractual relationship with a cause of action in favor of a third party against either the Client or Engineer.

   Furthermore, causes of action between the parties to this Agreement pertaining to acts of failures to act shall be deemed to have accrued and the applicable statute of limitations shall commence to run not later than the date of substantial completion.

2. Responsibility of the Engineer: Engineer will strive to perform services under this Agreement in accordance with generally accepted and currently recognized engineering practices and principles, and in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions. No other representation, express or implied, and no warranty or guarantee is included or intended in this Agreement, or in any report, opinion, document, or otherwise.

   Notwithstanding anything to the contrary which may be contained in this Agreement or any other material incorporated herein by reference, or in any Agreement between the Client and any other party concerning the Project, the Engineer shall not have control or be in charge of and shall not be responsible for the means, methods, techniques, sequences or procedures of construction, or the safety, safety precautions or programs of the Client, the construction contractor, other contractors or subcontractors performing any of the work or providing any of the services on the Project. Nor shall the Engineer be responsible for the acts or omissions of the Client, or for the failure of the Client, any architect, engineer, consultant, contractor or subcontractor to carry out their respective responsibilities in accordance with the Project documents, this Agreement or any other agreement concerning the Project. Any provision which purports to amend this provision shall be without effect unless it contains a reference that the content of this condition is expressly amended for the purposes described in such amendment and is signed by the Engineer.

3. Changes: Client reserves the right by written change order or amendment to make changes in requirements, amount of work, or engineering time schedule adjustments, and Engineer and Client shall negotiate appropriate adjustments acceptable to both parties to accommodate any changes, if commercially possible.

4. Suspension of Services: Client may, at any time, by written order to Engineer (Suspension of Services Order) require Engineer to stop all, or any part, of the services required by this Agreement. Upon receipt of such an order, Engineer shall immediately comply with its terms and take all reasonable steps to minimize the costs associated with the services affected by such order. Client, however, shall pay all costs incurred by the suspension, including all costs necessary to maintain continuity and for the resumptions

of the services upon expiration of the Suspension of Services Order. Engineer will not be obligated to provide the same personnel employed prior to suspension, when the services are resumed, in the event that the period of suspension is greater than thirty (30) days.

5. Termination: This Agreement may be terminated by either party upon thirty (30) days written notice in the event of substantial failure by the other party to perform in accordance with the terms hereof through no fault of the terminating party. This Agreement may be terminated by Client, under the same terms, whenever Client shall determine that termination is in its best interests. Cost of termination, including salaries, overhead and fee, incurred by Engineer either before or after the termination date shall be reimbursed by Client.

6. Documents Delivered to Client: Drawings, specifications, reports, and any other Project Documents prepared by Engineer in connection with any or all of the services furnished hereunder shall be delivered to the Client for the use of the Client. Engineer shall have the right to retain originals of all Project Documents and drawings for its files. Furthermore, it is understood and agreed that the Project Documents such as, but not limited to reports, calculations, drawings, and specifications prepared for the Project, whether in hard copy or machine readable form, are instruments of professional service intended for one-time use in the construction of this Project. These Project Documents are and shall remain the property of the Engineer. The Client may retain copies, including copies stored on magnetic tape or disk, for information and reference in connection with the occupancy and use of the Project.

When and if record drawings are to be provided by the Engineer, Client understands that information used in the preparation of record drawings is provided by others and Engineer is not responsible for accuracy, completeness, nor sufficiency of such information. Client also understands that the level of detail illustrated by record drawings will generally be the same as the level of detail illustrated by the design drawing used for project construction. If additional detail is requested by the Client to be included on the record drawings, then the Client understands and agrees that the Engineer will be due additional compensation for additional services.

It is also understood and agreed that because of the possibility that information and data delivered in machine readable form may be altered, whether inadvertently or otherwise, the Engineer reserves the right to retain the original tapes/disks and to remove from copies provided to the Client all identification reflecting the involvement of the Engineer in their preparation. The Engineer also reserves the right to retain hard copy originals of all Project Documentation delivered to the Client in machine readable form, which originals shall be referred to and shall govern in the event of any inconsistency between the two.

The Client understands that the automated conversion of information and data from the system and format used by the Engineer to an alternate system or format cannot be accomplished without the introduction of inexactitudes, anomalies, and errors. In the event Project Documentation provided to the Client in machine readable form is so converted, the Client agrees to assume all risks associated therewith and, to the fullest

extent permitted by law, to hold harmless and indemnify the Engineer from and against all claims, liabilities, losses, damages, and costs, including but not limited to attorney's fees, arising therefrom or in connection therewith.

The Client recognizes that changes or modifications to the Engineer's instruments of professional service introduced by anyone other than the Engineer may result in adverse consequences which the Engineer can neither predict nor control. Therefore, and in consideration of the Engineer's agreement to deliver its instruments of professional service in machine readable form, the Client agrees, to the fullest extent permitted by law, to hold harmless and indemnify the Engineer from and against all claims, liabilities, losses, damages, and costs, including but not limited to attorney's fees, arising out of or in any way connected with the modification, misinterpretation, misuse, or reuse by others of the machine readable information and data provided by the Engineer under this Agreement. The foregoing indemnification applies, without limitation, to any use of the Project Documentation on other projects, for additions to this Project, or for completion of this Project by others, excepting only such use as may be authorized, in writing, by the Engineer.

7. Reuse of Documents: All Project Documents including but not limited to reports, opinions of probable costs, drawings and specifications furnished by Engineer pursuant to this Agreement are intended for use on the Project only. They cannot be used by Client or others on extensions of the Project or any other project. Any reuse, without specific written verification or adaptation by Engineer, shall be at Client's sole risk, and Client shall indemnify and hold harmless Engineer from all claims, damages, losses, and expenses including attorney's fees arising out of or resulting therefrom.

   The Engineer shall have the right to include representations of the design of the Project, including photographs of the exterior and interior, among the Engineer's promotional and professional materials. The Engineer's materials shall not include the Client's confidential and proprietary information if the Client has previously advised the Engineer in writing of the specific information considered by the Client to be confidential and proprietary.

8. Standard of Practice: The Engineer will strive to conduct services under this agreement in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as of the date of this Agreement.

9. Compliance With Laws: The Engineer will strive to exercise usual and customary professional care in his/her efforts to comply with those laws, codes, ordinance and regulations which are in effect as of the date of this Agreement.

   With specific respect to prescribed requirements of the Americans with Disabilities Act of 1990 or certified state or local accessibility regulations (ADA), Client understands ADA is a civil rights legislation and that interpretation of ADA is a legal issue and not adesign issue and, accordingly, retention of legal counsel (by Client) for purposes of interpretation is advisable. As such and with respect to ADA, Client agrees to waive any action against Engineer, and to indemnify and defend Engineer against any claim arising from Engineer's alleged failure to meet ADA requirements prescribed.

Further to the law and code compliance, the Client understands that the Engineer will strive to provide designs in accordance with the prevailing Standards of Practice as previously set forth, but that the Engineer does not warrant that any reviewing agency having jurisdiction will not for its own purposes comment, request changes and/or additions to such designs. In the event such design requests are made by a reviewing agency, but which do not exist in the form of a written regulation, ordinance or other similar document as published by the reviewing agency, then such design changes (at substantial variance from the intended design developed by the Engineer), if effected and incorporated into the project documents by the Engineer, shall be considered as Supplementary Task(s) to the Engineer's Scope of Service and compensated for accordingly.

10. Indemnification: Engineer shall indemnify and hold harmless Client up to the amount of this contract fee (for services) from loss or expense, including reasonable attorney's fees for claims for personal injury (including death) or property damage to the extent caused by the sole negligent act, error or omission of Engineer.

Client shall indemnify and hold harmless Engineer under this Agreement, from loss or expense, including reasonable attorney's fees, for claims for personal injuries (including death) or property damage arising out of the sole negligent act, error omission of Client.

In the event of joint or concurrent negligence of Engineer and Client, each shall bear that portion of the loss or expense that its share of the joint or concurrent negligence bears to the total negligence (including that of third parties), which caused the personal injury or property damage.

Engineer shall not be liable for special, incidental or consequential damages, including, but not limited to loss of profits, revenue, use of capital, claims of customers, cost of purchased or replacement power, or for any other loss of any nature, whether based on contract, tort, negligence, strict liability or otherwise, by reasons of the services rendered under this Agreement.

11. Opinions of Probable Cost: Since Engineer has no control over the cost of labor, materials or equipment, or over the Contractor(s) method of determining process, or over competitive bidding or market conditions, his/her opinions of probable Project Construction Cost provided for herein are to be made on the basis of his/her experience and qualifications and represent his/her judgement as a design professional familiar with the construction industry, but Engineer cannot and does not guarantee that proposal, bids or the Construction Cost will not vary from opinions of probable construction cost prepared by him/her. If prior to the Bidding or Negotiating Phase, Client wishes greater accuracy as to the Construction Cost, the Client shall employ an independent cost estimator Consultant for the purpose of obtaining a second construction cost opinion independent from Engineer.

12. Governing Law & Dispute Resolutions: This Agreement shall be governed by and construed in accordance with Articles previously set forth by (Item 9 of) this Agreement, together with the laws of the **State of Illinois**.

Any claim, dispute or other matter in question arising out of or related to this Agreement, which can not be mutually resolved by the parties of this Agreement, shall be subject to mediation as a condition precedent to arbitration (if arbitration is agreed upon by the parties of this Agreement) or the institution of legal or equitable proceedings by either party. If such matter relates to or is the subject of a lien arising out of the Engineer's services, the Engineer may proceed in accordance with applicable law to comply with the lien notice or filing deadlines prior to resolution of the matter by mediation or by arbitration.

The Client and Engineer shall endeavor to resolve claims, disputes and other matters in question between them by mediation which, unless the parties mutually agree otherwise, shall be in accordance with the Construction Industry Mediation Rules of the American Arbitration Association currently in effect. Requests for mediation shall be filed in writing with the other party to this Agreement and with the American Arbitration Association. The request may be made concurrently with the filing of a demand for arbitration but, in such event, mediation shall proceed in advance of arbitration or legal or equitable proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order.

The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

13. Successors and Assigns: The terms of this Agreement shall be binding upon and inure to the benefit of the parties and their respective successors and assigns: provided, however, that neither party shall assign this Agreement in whole or in part without the prior written approval of the other.

14. Waiver of Contract Breach: The waiver of one party of any breach of this Agreement or the failure of one party to enforce at any time, or for any period of time, any of the provisions hereof, shall be limited to the particular instance, shall not operate or be deemed to waive any future breaches of this Agreement and shall not be construed to be a waiver of any provision, except for the particular instance.

15. Entire Understanding of Agreement: This Agreement represents and incorporates the entire understanding of the parties hereto, and each party acknowledges that there are no warranties, representations, covenants or understandings of any kind, matter or description whatsoever, made by either party to the other except as expressly set forth herein. Client and the Engineer hereby agree that any purchase orders, invoices, confirmations, acknowledgments or other similar documents executed or delivered with respect to the subject matter hereof that conflict with the terms of the Agreement shall be null, void and without effect to the extent they conflict with the terms of this Agreement.

16. Amendment: This Agreement shall not be subject to amendment unless another instrument is duly executed by duly authorized representatives of each of the parties and entitled "Amendment of Agreement".

17. Severability of Invalid Provisions: If any provision of the Agreement shall be held to contravene or to be invalid under the laws of any particular state, county or jurisdiction where used, such contravention shall not invalidate the entire Agreement, but it shall be construed as if not containing the particular provisions held to be invalid in the particular state, country or jurisdiction and the rights or obligations of the parties hereto shall be construed and enforced accordingly.

18. Force Majeure: Neither Client nor Engineer shall be liable for any fault or delay caused by any contingency beyond their control including but not limited to acts of God, wars, strikes, walkouts, fires, natural calamities, or demands or requirements of governmental agencies.

19. Subcontracts: Engineer may subcontract portions of the work, but each subcontractor must be approved by Client in writing.

20. Access and Permits: Client shall arrange for Engineer to enter upon public and private property and obtain all necessary approvals and permits required from all governmental authorities having jurisdiction over the Project. Client shall pay costs (including Engineer's employee salaries, overhead and fee) incident to any effort by Engineer toward assisting Client in such access, permits or approvals, if Engineer perform such services.

21. Designation of Authorized Representative: Each party (to this Agreement) shall designate one or more persons to act with authority in its behalf in respect to appropriate aspects of the Project. The persons designated shall review and respond promptly to all communications received from the other party.

22. Notices: Any notice or designation required to be given to either party hereto shall be in writing, and unless receipt of such notice is expressly required by the terms hereof shall be deemed to be effectively served when deposited in the mail with sufficient first class postage affixed, and addressed to the party to whom such notice is directed at such party's place of business or such other address as either party shall hereafter furnish to the other party by written notice as herein provided.

23. Limit of Liability: The Client and the Engineer have discussed the risks, rewards, and benefits of the project and the Engineer's total fee for services. In recognition of the relative risks and benefits of the Project to both the Client and the Engineer, the risks have been allocated such that the Client agrees that to the fullest extent permitted by law, the Engineer's total aggregate liability to the Client for any and all injuries, claims, costs, losses, expenses, damages of any nature whatsoever or claim expenses arising out of this Agreement from any cause or causes, including attorney's fees and costs, and expert witness fees and costs, shall not exceed the total Engineer's fee for professional engineering services rendered on this project as made part of this Agreement. Such causes included but are not limited to the Engineer's negligence, errors, omissions, strict liability or breach of contract. It is intended that this limitation apply to any and all liability or cause of action however alleged or arising, unless otherwise prohibited by law.

24. Client's Responsibilities: The Client agrees to provide full information regarding requirements for and about the Project, including a program which shall set forth the Client's objectives, schedule, constraints, criteria, special equipment, systems and site requirements.

The Client agrees to furnish and pay for all legal, accounting and insurance counseling services as may be necessary at any time for the Project, including auditing services which the Client may require to verify the Contractor's Application for Payment or to ascertain how or for what purpose the Contractor has used the money paid by or on behalf of the Client.

The Client agrees to require the Contractor, to the fullest extent permitted by law, to indemnify, hold harmless, and defend the Engineer, its consultants, and the employees and agents of any of them from and against any and all claims, suits, demands, liabilities, losses, damages, and costs ("Losses"), including but not limited to costs of defense, arising in whole or in part out of the negligence of the Contractor, its subcontractors, the officers, employees, agents, and subcontractors of any of them, or anyone for whose acts any of them may be liable, regardless of whether or not such Losses are caused in part by a party indemnified hereunder. Specifically excluded from the foregoing are Losses arising out of the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs, or specifications, and the giving of or failure to give directions by the Engineer, its consultants, and the agents and employees of any of them, provided such giving or failure to give is the primary cause of Loss. The Client also agrees to require the Contractor to provide to the Engineer the required certificate of insurance.

The Client further agrees to require the Contractor to name the Engineer, its agents and consultants as additional insureds on the Contractor's policy or policies of comprehensive or commercial general liability insurance. Such insurance shall include products and completed operations and contractual liability coverages, shall be primary and noncontributing with any insurance maintained by the Engineer or its agents and consultants, and shall provide that the Engineer be given thirty days, unqualified written notice prior to any cancellation thereof.

In the event the foregoing requirements, or any of them, are not established by the Client and met by the Contractor, the Client agrees to indemnify and hold harmless the Engineer, its employees, agents, and consultants from and against any and all Losses which would have been indemnified and insured against by the Contractor, but were not.

When Contract Documents prepared under the Scope of Services of this contract require insurance(s) to be provided, obtained and/or otherwise maintained by the Contractor, the Client agrees to be wholly responsible for setting forth any and all such insurance requirements. Furthermore, any document provided for Client review by the Engineer under this Contract related to such insurance(s) shall be considered as sample insurance requirements and not the recommendation of the Engineer. Client agrees to have their own risk management department review any and all insurance requirements for adequacy and to determine specific types of insurance(s) required for the project. Client further agrees that decisions concerning types and amounts of insurance are

specific to the project and shall be the product of the Client. As such, any and all insurance requirements made part of Contract Documents prepared by the Engineer are not to be considered the Engineer's recommendation, and the Client shall make the final decision regarding insurance requirements.

25. Information Provided by Others: The Engineer shall indicate to the Client the information needed for rendering of the services of this Agreement. The Client shall provide to the Engineer such information as is available to the Client and the Client's consultants and contractors, and the Engineer shall be entitled to rely upon the accuracy and completeness thereof. The Client recognizes that it is impossible for the Engineer to assure the accuracy, completeness and sufficiency of such information, either because it is impossible to verify, or because of errors or omissions which may have occurred in assembling the information the Client is providing. Accordingly, the Client agrees, to the fullest extent permitted by law, to indemnify and hold the Engineer and the Engineer's subconsultants harmless from any claim, liability or cost (including reasonable attorneys' fees and cost of defense) for injury or loss arising or allegedly arising from errors, omissions or inaccuracies in documents or other information provided by the Client to the Engineer.

26. Payment: Client shall be invoiced once each month for work performed during the preceding period. Client agrees to pay each invoice within thirty (30) days of its receipt. The client further agrees to pay interest on all amounts invoiced and not paid or objected to for valid cause within said thirty (30) day period at the rate of eighteen (18) percent per annum (or the maximum interest rate permitted under applicable law, whichever is the lesser) until paid. Client further agrees to pay Engineer's cost of collection of all amounts due and unpaid after sixty (60) days, including court costs and reasonable attorney's fees, as well as costs attributed to suspension of services accordingly and as follows:

> Collection Costs. In the event legal action is necessary to enforce the payment provisions of this Agreement, the Engineer shall be entitled to collect from the Client any judgement or settlement sums due, reasonable attorneys' fees, court costs and expenses incurred by the Engineer in connection therewith and, in addition, the reasonable value of the Engineer's time and expenses spent in connection with such collection action, computed at the Engineer's prevailing fee schedule and expense policies.
>
> Suspension of Services. If the Client fails to make payments when due or otherwise is in breach of this Agreement, the Engineer may suspend performance of services upon five (5) calendar days' notice to the Client. The Engineer shall have no liability whatsoever to the Client for any costs or damages as a result of such suspension caused by any breach of this Agreement by the Client. Client will reimburse Engineer for all associated costs as previously set forth in (Item 4 of) this Agreement.

27. When construction observation tasks are part of the service to be performed by the Engineer under this Agreement, the Client will include the following clause in the construction contract documents and Client agrees not to modify or delete it:

Kotecki Waiver. Contractor (and any subcontractor into whose subcontract this clause is incorporated) agrees to assume the entire liability for all personal injury claims suffered by its own employees, including without limitation claims under the **Illinois** Structural Work Act, asserted by persons allegedly injured on the Project; waives any limitation of liability defense based upon the Worker's Compensation Act, court interpretations of said Act or otherwise; and to the fullest extent permitted by law, agrees to indemnify and hold harmless and defend Owner and Engineer and their agents, employees and consultants (the "Indemnitees") from and against all such loss, expense, damage or injury, including reasonable attorneys' fees, that the Indemnitees may sustain as a result of such claims, except to the extent that **Illinois** law prohibits indemnity for the Indemnitees' own negligence. The Owner and Engineer are designated and recognized as explicit third party beneficiaries of the Kotecki Waiver within the general contract and all subcontracts entered into in furtherance of the general contract.

28. Job Site Safety/Supervision & Construction Observation: The Engineer shall neither have control over or charge of, nor be responsible for, the construction means, methods, techniques, sequences of procedures, or for safety precautions and programs in connection with the Work since they are solely the Contractor's rights and responsibilities. The Client agrees that the Contractor shall supervise and direct the work efficiently with his/her best skill and attention; and that the Contractor shall be solely responsible for the means, methods, techniques, sequences and procedures of construction and safety at the job site. The Client agrees and warrants that this intent shall be carried out in the Client's contract with the Contractor. The Client further agrees that the Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work; and that the Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to all employees on the subject site and all other persons who may be affected thereby. The Engineer shall have no authority to stop the work of the Contractor or the work of any subcontractor on the project.

When construction observation services are included in the Scope of Services, the Engineer shall visit the site at intervals appropriate to the stage of the Contractor's operation, or as otherwise agreed to by the Client and the Engineer to: 1) become generally familiar with and to keep the Client informed about the progress and quality of the Work; 2) to strive to bring to the Client's attention defects and deficiencies in the Work and; 3) to determine in general if the Work is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Engineer shall not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. If the Client desires more extensive project observation, the Client shall request that such services be provided by the Engineer as Additional and Supplemental Construction Observation Services in accordance with the terms of this Agreement.

The Engineer shall not be responsible for any acts or omissions of the Contractor, subcontractor, any entity performing any portions of the Work, or any agents or employees of any of them. The Engineer does not guarantee the performance of the

Contractor and shall not be responsible for the Contractor's failure to perform its Work in accordance with the Contract Documents or any applicable laws, codes, rules or regulations.

When municipal review services are included in the Scope of Services, the Engineer (acting on behalf of the municipality), when acting in good faith in the discharge of its duties, shall not thereby render itself liable personally and is, to the maximum extent permitted by law, relieved from all liability for any damage that may accrue to persons or property by reason of any act or omission in the discharge of its duties. Any suit brought against the Engineer which involve the acts or omissions performed by it in the enforcement of any provisions of the Client's rules, regulation and/or ordinance shall be defended by the Client until final termination of the proceedings. The Engineer shall be entitled to all defenses and municipal immunities that are, or would be, available to the Client.

29. Insurance and Indemnification: The Engineer and the Client understand and agree that the Client will contractually require the Contractor to defend and indemnify the Engineer and/or any subconsultants from any claims arising from the Work. The Engineer and the Client further understand and agree that the Client will contractually require the Contractor to procure commercial general liability insurance naming the Engineer as an additional named insured with respect to the work. The Contractor shall provide to the Client certificates of insurance evidencing that the contractually required insurance coverage has been procured. However, the Contractor's failure to provide the Client with the requisite certificates of insurance shall not constitute a waiver of this provision by the Engineer.

The Client and Engineer waive all rights against each other and against the Contractor and consultants, agents and employees of each of them for damages to the extent covered by property insurance during construction. The Client and Engineer each shall require similar waivers from the Contractor, consultants, agents and persons or entities awarded separate contracts administered under the Client's own forces.

30. Hazardous Materials/Pollutants: Unless otherwise provided by this Agreement, the Engineer and Engineer's consultants shall have no responsibility for the discovery, presence, handling, removal or disposal of or exposure of persons to hazardous materials/pollutants in any form at the Project site, including but not limited to mold/mildew, asbestos, asbestos products, polychlorinated biphenyl (PCB) or other toxic/hazardous/pollutant type substances.

Furthermore, Client understands that the presence of mold/mildew and the like are results of prolonged or repeated exposure to moisture and the lack of corrective action. Client also understands that corrective action is a operation, maintenance and repair activity for which the Engineer is not responsible.

AGENDA MEMO
Municipal Services Committee
December 12, 2012

Issue Statement

Approval of a resolution to enter into an engineering agreement with Christopher B. Burke Engineering for the 2013 Street Maintenance Program in an amount not to exceed $30,426.00.

Background/History

Attached, please find an engineering agreement with Christopher B. Burke Engineering for the 2013 Street Maintenance Program. The following roads have been slated for the 2013 Street Maintenance Program:

PROPOSED 2013 ROAD PROGRAM

Street Name	Rating	Subdivision	Limit	Most Recent Rehab	Road Length
*/** Roger Road	66	Marion Hills N	Clarendon Hills to Plainfield	1999	1120
* Eleanor Place	66	Marion Hills N	69th to Holly	1997	1050
* Brookbank Avenue	66	Marion Hills N	69th to Holly	1997	1150
Woodvale Dr	66	Farmingdale Village	Beller to 87th	1997	1270
Highcrest Dr	66	Farmingdale Village	Beller to Hillside	1997	765
Beller Ct	66	Farmingdale Village	Beller to Limit	1997	485
Dunmore Dr	66	Tara Hill	Kilkenny to dead end	1995	1000
Tara Hill Rd	65	Tara Hill	Dunmore to Carlow	1995	1300
Carlow Dr	65	Tara Hill	Tara Hill to Andrus	1995	1500
Brandon Rd	65	Tara Hill	Carlow to Middleton	1995	1060
Kerry Ln	66	Tara Hill	Tara Hill to Brandon	1995	660
Middleton Rd	65	Tara Hill	Kerry to Dunmore	1995	1060
Kilkenny Dr	66	Tara Hill	Brandon to Dunmore	1995	1200
Creekside Ln	66	Brookeridge	Kearney to Dead End	2001	2500
Carriage Green Dr (entrance)	66	Carriage Green 1-2	Frontage to Old Oak	1999	200
Carriage Green Dr (entrance)	67	Carriage Green 1-2	Frontage to Old Oak	1999	200
Carriage Green Dr	66	Carriage Green 1-2	Old Oak to Coachman's	1999	1440

Street Name	Rating	Subdivision	Limit	Most Recent Rehab	Road Length
Carriage Green Dr	67	Carriage Green 1-2	Coachman's to Heather	1999	1260
Gleneyre Rd	65	Carriage Green 1-2	Heather to Coachman's	2002	1100
Heather Ln	67	Carriage Green 1-2	Carriage Green to Gleneyre	2002	800
** Coachman's Rd	69	Carriage Green 1-2	Carriage Green to Dead End	2002	880
Dorchester Ln	66	Farmingdale Ter N	79th to Somerset	1997	615
Somerset Ln	66	Farmingdale Ter N	Dorchester to Mayfair	1997	335
Mayfair Ln	66	Farmingdale Ter N	79th to Somerset	1997	615
Redondo Court	66	Knottingham	Redondo Dr to Redondo Dr	1994	409
Florence Ave	65	Knottingham	Manning to Limit	1996	1250
Center Cir	65	Knottingham	Florence to Dead End	1999	190
Gordon Ct	65	Knottingham	Florence to Dead End	1999	190
Wilcox Avenue	67	Farmingdale 5-9	71st to McAdam	1998	625
McAdam Rd	67	Farmingdale 5-9	Wilcox to Holly	1994	980
** Howdy Ln	67	Downers Fairview	Wirth to Gold Grove	1997	540
Richard Rd	67	Downers Fairview	72nd to Gigi	1999	720
Greenbriar Ln	67	Farmingdale South	Bailey to Grant	1997	1200
** Iroquois St	67	Farmingdale South	Cass to Adams	1997	980
** Grant St	67	Farmingdale South	Greenbriar to Sleepy Hollow	1999	660
** Grant St (CDS)	70	Farmingdale South	Grant St to Limit	2000	300
Sweetwater Ct	66	Hidden Lakes	Hinswood to Limit	1995	400
Water Plant 4		1897 Manning Road		1950	
LINEAL FEET					32009
MILES-OPTION 1					6.06
MILES-OPTION 2 REMOVED **					5.21
Darien Park District-Parking Lot-Option 3	N/A		802 Plainfield Rd Reimb from Park District		N/A
Water Plant 3 – Option 4	N/A		1930 Manning Road Budget Pending		N/A

* Pending Ditch project approval
** Proposed roadways to be postponed-pending Budget and/or bid results

The proposed Engineering Agreement includes the following scope of services:

Task 1 – **Field Reconnaissance**: CBBEL Staff will perform a Field Reconnaissance of the streets to be resurfaced with Public Works. The purpose of the Field Reconnaissance will be to determine the limits and estimate the quantity of full depth bituminous pavement patching, and drainage structure to be adjusted. The results of the Field Reconnaissance will be reviewed with the Department of Public Works and compared to previous estimates to determine their impact on the estimated construction cost.
Total Engineering Cost for Task 1 - $2,760

Task 2 – **Preparation of Bid Booklet**: CBBEL will prepare a bid booklet in IDOT format for the proposed improvements for a local letting (local funds only). The documents will generally consist of typical sections, special provisions, pay items, working days and estimated bid quantities. Quantities will be estimated based on site visits and City Staff input from the existing cores and the field reconnaissance. CBBEL will prepare a base bid and alternate bids to help give the City the most flexibility to use the available fund for the project.

Total Engineering Cost for Task 2 - $16,062.00

Task 3 – **Coordination Meetings**-CBBEL has assumed that two coordination meetings will be required with the City regarding the projects.

Total Engineering Cost for Task 3 - $1,440.00

Task 4 – Bidding Assistance: CBBEL will advertise for bidding, distribute plans and specifications to all bidders, and hold a bid opening. CBBEL will review and tabulate all of the bids and make a recommendation of award.

Total Engineering Cost for Task 4 - $4,164.00

Task 5 - Sampling Analysis - Quality Assurance Quality Control - The following task is associated with Quality Assurance and Quality Control through the services of an outside independent agency, Testing Services Corporation. Testing Services Corporation will perform as per the requirements the services for assuring Quality Control and Quality Assurance. These services include but are not limited to road surface compaction requirements, and material specifications as required. Field reports will be made available to the Public Works Superintendent and a formal copy will be forwarded to Christopher B. Burke Engineering.

Total Engineering Cost for Task 5 - $6,000.00

Below, please find a summary cost for the abovementioned items:
Cost for Task 1- $ 2,760.00
Cost for Task 2- $16,062.00

Cost for Task 3-	$ 1,440.00
Cost for Task 4-	$ 4,164.00
Cost for Task 5-	$ 6,000.00
Total cost	$30,426.00

Funding for Engineering Services would be expended from the following line item of the FY13 Budget:

ACCOUNT NUMBER	ACCOUNT DESCRIPTION	FY 12/13 BUDGET	PROPOSED EXPENDITURE	PROPOSED BALANCE
01-30-4325	CONSULTING PROFESSIONAL-ENG BID SPECS	$ 30,500.00	$ 30,426.00	$ 74.00

Staff Recommendation

Staff recommends approval of this Engineering Agreement through the attached resolution with Christopher B. Burke Engineering in an amount not to exceed of $30,426.00.

The Bid Specifications will not be released until the Funds for the proposed program are approved by the City Council. If the program is reduced the engineering cost as proposed for some of the tasks will also be reduced.

Tentative Schedule

Description/Task	Completion Date
Prepare Bid Specifications	December 2012
Bid Due Date	January 2013
Committee Agenda Contract Review/Approval	January/February 2013
Council Agenda Contract Review/Approval	February/March 2013
Execute Contract	March 2013
Start Layout	April 2013
Start Construction	Mid-May 2013
Completion	July 2013

Alternate Consideration

Not approving the agreement.

Decision Mode

This item will be placed on the December 17, 2012 City Council agenda for formal consideration.

RESOLUTION NO._____

A RESOLUTION AUTHORIZING THE MAYOR TO ENTER INTO AN ENGINEERING AGREEMENT WITH CHRISTOPHER B. BURKEN ENGINEERING, LTD. FOR THE 2013 STREET MAINTENANCE PROGRAM IN AN AMOUNT NOT TO EXCEED $30,426.00

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF DARIEN, DU PAGE COUNTY, ILLINOIS, as follows:

SECTION 1: The City Council of the City of Darien hereby authorizes the Mayor to enter into an Engineering Agreement with Christopher B. Burke Engineering, Ltd. for the 2013 Street Maintenance Program in an amount not to exceed $30,426.00, a copy of which is attached hereto as "Exhibit A" and is by this reference expressly incorporated herein.

SECTION 2: This Resolution shall be in full force and effect from and after its passage and approval as provided by law.

PASSED BY THE CITY COUNCIL OF THE CITY OF DARIEN, DU PAGE COUNTY, ILLINOIS, this 17th day of December, 2012.

AYES: _____

NAYS: _____

ABSENT: _____

APPROVED BY THE MAYOR OF THE CITY OF DARIEN, DU PAGE COUNTY, ILLINOIS, this 17th day of December, 2012.

_____
KATHLEEN MOESLE WEAVER, MAYOR

ATTEST:

_____
JOANNE E. RAGONA, CITY CLERK

APPROVED AS TO FORM:

_____
CITY ATTORNEY

Exhibit A

CHRISTOPHER B. BURKE ENGINEERING, LTD.
9575 West Higgins Road Suite 600 Rosemont, Illinois 60018 TEL (847) 823-0500 FAX(847) 823-0520

Revised November 30, 2012
November 20, 2012

City of Darien
City Hall
1702 Plainfield Road
Darien, Illinois 60561

Attention: Dan Gombac

Subject: Proposal for Professional Engineering Services
2013 Road Program

Dear Dan:

At your request, we are providing this proposal to provide professional engineering services related to the preparation of the bidding documents for the City's 2013 Road Program. Included below you will find our Understanding of the Assignment and Scope and Fee.

UNDERSTANDING OF THE ASSIGNMENT

Based on the information provided by the City, the 2013 Road Program will consist of resurfacing for the following streets:

STREET	ROAD LENGTH
Roger Road	1120
Eleanor Place	1050
Brookbank Avenue	1150
Woodvale Dr.	1270
Highcrest Dr	765
Beller Ct.	485
Dunmore Dr.	1000
Tara Hill Rd.	1300
Carlow Dr.	1500
Brandon Rd.	1060
Kerry Ln.	660

Middleton Rd.	1060
Kilkenny Dr.	1200
Creekside Ln.	2500
Carriage Greens Dr. (entrance)	200
Carriage Greens Dr. (entrance)	200
Carriage Green Dr.	1440
Carriage Green Dr.	1260
Gleneyre Rd.	1100
Heather Ln.	800
Coachmans Rd.	880
Dorchester Ln.	615
Somerset Ln.	335
Mayfair Ln.	615
Redondo Court	409
Florence Ave.	1250
Center Cir	190
Gordon Cr.	190
Wilcox Avenue	625
McAdam Rd	980
Howdy Ln	540
Richard Rd.	720
Greenbriar Ln.	1200
Iroquois St.	980
Grant St.	660
Grant St. (CDS)	300
Streetwater Ct.	400
LN FEET	32,009
MILES	6.1

Also, it is our understanding that the City may want the bid booklet structured to remove up to one mile of roadways, plans the following two options.

Option 3 – Darien Park District Parking Lot 3.
Option 4 – Water Plant 3

Pavement resurfacing will include the grinding 2 ¼ inches of the existing hot-mix pavement, patching poor areas, the installation of 1 ½ inches of hot-mix surface course, ¾ inches of leveling binder, and structure adjustments or grinding 4 inches of the

existing hot-mix pavement, patching poor areas, the installation of 1 ½ inches of hot-mix surface course, 2 ½ inches of hot-mix binder course depending on the results of the cores being performed by Testing Service Corporation (TSC) under a separate proposal.

The total length of streets to be resurfaced for the project is approximately 32,009 feet (6.1 miles).

SCOPE AND FEE

TASK 1 – FIELD RECONNAISSANCE: CBBEL Staff will perform a Field Reconnaissance of the streets to be resurfaced with Public Works. The purpose of the Field Reconnaissance will be to determine the limits and estimate the quantity of full depth bituminous pavement patching, and drainage structure to be adjusted. The results of the Field Reconnaissance will be reviewed with the Department of Public Works and compared to previous estimates to determine their impact on the estimated construction cost.

Engineer IV $138/hr x 20 hrs = $2,760

TASK 2 – PREPARATION OF BID BOOKLET: CBBEL will prepare a bid booklet in IDOT format for the proposed improvements for a local letting (local funds only). The documents will generally consist of typical sections, special provisions, pay items, working days and estimated bid quantities. Quantities will be estimated based on site visits and City Staff Input from the existing cores and the field reconnaissance. CBBEL will prepare a base bid and alternate bids to help give the City the most flexibility to use the available fund for the project.

Engineer IV $138/hr x 24 hrs	= $ 3,312
Engineer I/II $102/hr x 100 hrs	= $12,750
	Total $16,062

TASK 3 – COORDINATION MEETINGS: CBBEL has assumed that two coordination meetings will be required with the City regarding the projects.

Engineer IV $138/hr x 2 meetings x 3 hrs	= $ 828
Engineer I/II $102/hr x 2 meetings x 3 hrs	= $ 612
	Total $1,440

TASK 4 – BIDDING ASSISTANCE: CBBEL will advertise for bidding, distribute plans and specifications to all bidders, and hold a bid opening. CBBEL will review and tabulate all of the bids and make a recommendation of award.

Engineer IV $138/hr x 4 hrs	= $ 552
Engineer I/II $ 102/hr x 6 hrs	= $ 612
Direct Costs	= $3,000
	Total $4,164

TASK 5 – SAMPLING ANALYSIS – QUALITY ASSURANCE QUALITY CONTROL: Sampling Analysis-Quality Assurance Quality Control-The following task is associated with Quality Assurance and Quality Control through the services of an outside independent agency Testing Services Corporation. The Testing Services Corporation will perform as per the requirements the services for assuring Quality Control and Quality Assurance. These services include but are not limited to road surface compaction requirements, and materials specifications as required. Field reports will be made available to the Public Works Superintendent and a formal copy will be forwarded to Christopher B. Burke Engineering.

CBBEL estimates the following fees for each of the tasks described above:

Task 1	Field Reconnaissance	$ 2,760
Task 2	Preparation of Bid Booklet	$16,062
Task 3	Coordination Meetings	$ 1,440
Task 4	Bidding Assistance	$ 4,164
Task 5	Sampling Analysis – Quality Assurance/Quality Control	$ 6,000
	NOT TO EXCEED	$30,426

We will bill you at the hourly rates specified on the attached Schedule of Charges and establish our contract in accordance with the attached General Terms and Conditions. Direct costs for blueprints, photocopying, mailing, overnight delivery, messenger services and report compilation are included in the Fee Estimate. These General Terms and Conditions are expressly incorporated into and are an integral part of this contract for professional services. It should be emphasized that any requested meetings or additional services that are not included in the preceding Fee Estimate will be billed at the attached hourly rates.

Please sign and return one copy of this agreement as an indication of acceptance and notice to proceed. Please feel free to contact us anytime.

Sincerely,

Christopher B. Burke, PhD, PE, D.WRE, F.ASCE
President

Encl. Schedule of Charges
General Terms and Conditions

THIS PROPOSAL, SCHEDULE OF CHARGES AND GENERAL TERMS AND CONDITIONS ACCEPTED FOR CITY OF DARIEN.

BY: _____

TITLE: _____

DATE: _____

CHRISTOPHER B. BURKE ENGINEERING, LTD.
STANDARD CHARGES FOR PROFESSIONAL SERVICES
JANUARY, 2012

Personnel	Charges* ($/Hr)
Principal	240
Engineer VI	210
Engineer V	173
Engineer IV	138
Engineer III	125
Engineer I/II	102
Survey V	178
Survey IV	132
Survey III	127
Survey II	100
Survey I	78
Resource Planner V	112
Resource Planner IV	108
Resource Planner III	100
Resource Planner I/II	88
Engineering Technician V	150
Engineering Technician IV	132
Engineering Technician III	107
Engineering Technician I/II	97
CAD Manager	138
Assistant CAD Manager	126
CAD II	125
CAD I	98
GIS Specialist III	120
GIS Specialist I/II	67
Landscape Architect	138
Environmental Resource Specialist V	154
Environmental Resource Specialist IV	134
Environmental Resource Specialist III	114
Environmental Resource Specialist I/II	94
Environmental Resource Technician	90
Administrative	88
Engineering Intern	53
Survey Intern	53
Information Technician III	97
Information Technician I/II	62

Direct Costs	
Outside Copies, Blueprints, Messenger, Delivery Services, Mileage	Cost + 12%

*Charges include overhead and profit

Please note: In recognition of the economic challenges facing our clients, we have not increased our schedule of charges since January 2009.

CHRISTOPHER B. BURKE ENGINEERING, LTD.
GENERAL TERMS AND CONDITIONS

1. Relationship Between Engineer and Client: Christopher B. Burke Engineering, Ltd. (Engineer) shall serve as Client's professional engineer consultant in those phases of the Project to which this Agreement applies. This relationship is that of a buyer and seller of professional services and as such the Engineer is an independent contractor in the performance of this Agreement and it is understood that the parties have not entered into any joint venture or partnership with the other. The Engineer shall not be considered to be the agent of the Client. Nothing contained in this Agreement shall create a contractual relationship with a cause of action in favor of a third party against either the Client or Engineer.

   Furthermore, causes of action between the parties to this Agreement pertaining to acts of failures to act shall be deemed to have accrued and the applicable statute of limitations shall commence to run not later than the date of substantial completion.

2. Responsibility of the Engineer: Engineer will strive to perform services under this Agreement in accordance with generally accepted and currently recognized engineering practices and principles, and in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions. No other representation, express or implied, and no warranty or guarantee is included or intended in this Agreement, or in any report, opinion, document, or otherwise.

   Notwithstanding anything to the contrary which may be contained in this Agreement or any other material incorporated herein by reference, or in any Agreement between the Client and any other party concerning the Project, the Engineer shall not have control or be in charge of and shall not be responsible for the means, methods, techniques, sequences or procedures of construction, or the safety, safety precautions or programs of the Client, the construction contractor, other contractors or subcontractors performing any of the work or providing any of the services on the Project. Nor shall the Engineer be responsible for the acts or omissions of the Client, or for the failure of the Client, any architect, engineer, consultant, contractor or subcontractor to carry out their respective responsibilities in accordance with the Project documents, this Agreement or any other agreement concerning the Project. Any provision which purports to amend this provision shall be without effect unless it contains a reference that the content of this condition is expressly amended for the purposes described in such amendment and is signed by the Engineer.

3. Changes: Client reserves the right by written change order or amendment to make changes in requirements, amount of work, or engineering time schedule adjustments, and Engineer and Client shall negotiate appropriate adjustments acceptable to both parties to accommodate any changes, if commercially possible.

4. Suspension of Services: Client may, at any time, by written order to Engineer (Suspension of Services Order) require Engineer to stop all, or any part, of the services required by this Agreement. Upon receipt of such an order, Engineer shall immediately comply with its terms and take all reasonable steps to minimize the costs associated with the services affected by such order. Client, however, shall pay all costs incurred by the suspension, including all costs necessary to maintain continuity and for the resumptions

of the services upon expiration of the Suspension of Services Order. Engineer will not be obligated to provide the same personnel employed prior to suspension, when the services are resumed, in the event that the period of suspension is greater than thirty (30) days.

5. Termination: This Agreement may be terminated by either party upon thirty (30) days written notice in the event of substantial failure by the other party to perform in accordance with the terms hereof through no fault of the terminating party. This Agreement may be terminated by Client, under the same terms, whenever Client shall determine that termination is in its best interests. Cost of termination, including salaries, overhead and fee, incurred by Engineer either before or after the termination date shall be reimbursed by Client.

6. Documents Delivered to Client: Drawings, specifications, reports, and any other Project Documents prepared by Engineer in connection with any or all of the services furnished hereunder shall be delivered to the Client for the use of the Client. Engineer shall have the right to retain originals of all Project Documents and drawings for its files. Furthermore, it is understood and agreed that the Project Documents such as, but not limited to reports, calculations, drawings, and specifications prepared for the Project, whether in hard copy or machine readable form, are instruments of professional service intended for one-time use in the construction of this Project. These Project Documents are and shall remain the property of the Engineer. The Client may retain copies, including copies stored on magnetic tape or disk, for information and reference in connection with the occupancy and use of the Project.

   When and if record drawings are to be provided by the Engineer, Client understands that information used in the preparation of record drawings is provided by others and Engineer is not responsible for accuracy, completeness, nor sufficiency of such information. Client also understands that the level of detail illustrated by record drawings will generally be the same as the level of detail illustrated by the design drawing used for project construction. If additional detail is requested by the Client to be included on the record drawings, then the Client understands and agrees that the Engineer will be due additional compensation for additional services.

   It is also understood and agreed that because of the possibility that information and data delivered in machine readable form may be altered, whether inadvertently or otherwise, the Engineer reserves the right to retain the original tapes/disks and to remove from copies provided to the Client all identification reflecting the involvement of the Engineer in their preparation. The Engineer also reserves the right to retain hard copy originals of all Project Documentation delivered to the Client in machine readable form, which originals shall be referred to and shall govern in the event of any inconsistency between the two.

   The Client understands that the automated conversion of information and data from the system and format used by the Engineer to an alternate system or format cannot be accomplished without the introduction of inexactitudes, anomalies, and errors. In the event Project Documentation provided to the Client in machine readable form is so converted, the Client agrees to assume all risks associated therewith and, to the fullest

extent permitted by law, to hold harmless and indemnify the Engineer from and against all claims, liabilities, losses, damages, and costs, including but not limited to attorney's fees, arising therefrom or in connection therewith.

The Client recognizes that changes or modifications to the Engineer's instruments of professional service introduced by anyone other than the Engineer may result in adverse consequences which the Engineer can neither predict nor control. Therefore, and in consideration of the Engineer's agreement to deliver its instruments of professional service in machine readable form, the Client agrees, to the fullest extent permitted by law, to hold harmless and indemnify the Engineer from and against all claims, liabilities, losses, damages, and costs, including but not limited to attorney's fees, arising out of or in any way connected with the modification, misinterpretation, misuse, or reuse by others of the machine readable information and data provided by the Engineer under this Agreement. The foregoing indemnification applies, without limitation, to any use of the Project Documentation on other projects, for additions to this Project, or for completion of this Project by others, excepting only such use as may be authorized, in writing, by the Engineer.

7. Reuse of Documents: All Project Documents including but not limited to reports, opinions of probable costs, drawings and specifications furnished by Engineer pursuant to this Agreement are intended for use on the Project only. They cannot be used by Client or others on extensions of the Project or any other project. Any reuse, without specific written verification or adaptation by Engineer, shall be at Client's sole risk, and Client shall indemnify and hold harmless Engineer from all claims, damages, losses, and expenses including attorney's fees arising out of or resulting therefrom.

   The Engineer shall have the right to include representations of the design of the Project, including photographs of the exterior and interior, among the Engineer's promotional and professional materials. The Engineer's materials shall not include the Client's confidential and proprietary information if the Client has previously advised the Engineer in writing of the specific information considered by the Client to be confidential and proprietary.

8. Standard of Practice: The Engineer will strive to conduct services under this agreement in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as of the date of this Agreement.

9. Compliance With Laws: The Engineer will strive to exercise usual and customary professional care in his/her efforts to comply with those laws, codes, ordinance and regulations which are in effect as of the date of this Agreement.

   With specific respect to prescribed requirements of the Americans with Disabilities Act of 1990 or certified state or local accessibility regulations (ADA), Client understands ADA is a civil rights legislation and that interpretation of ADA is a legal issue and not adesign issue and, accordingly, retention of legal counsel (by Client) for purposes of interpretation is advisable. As such and with respect to ADA, Client agrees to waive any action against Engineer, and to indemnify and defend Engineer against any claim arising from Engineer's alleged failure to meet ADA requirements prescribed.

Further to the law and code compliance, the Client understands that the Engineer will strive to provide designs in accordance with the prevailing Standards of Practice as previously set forth, but that the Engineer does not warrant that any reviewing agency having jurisdiction will not for its own purposes comment, request changes and/or additions to such designs. In the event such design requests are made by a reviewing agency, but which do not exist in the form of a written regulation, ordinance or other similar document as published by the reviewing agency, then such design changes (at substantial variance from the intended design developed by the Engineer), if effected and incorporated into the project documents by the Engineer, shall be considered as Supplementary Task(s) to the Engineer's Scope of Service and compensated for accordingly.

10. Indemnification: Engineer shall indemnify and hold harmless Client up to the amount of this contract fee (for services) from loss or expense, including reasonable attorney's fees for claims for personal injury (including death) or property damage to the extent caused by the sole negligent act, error or omission of Engineer.

Client shall indemnify and hold harmless Engineer under this Agreement, from loss or expense, including reasonable attorney's fees, for claims for personal injuries (including death) or property damage arising out of the sole negligent act, error omission of Client.

In the event of joint or concurrent negligence of Engineer and Client, each shall bear that portion of the loss or expense that its share of the joint or concurrent negligence bears to the total negligence (including that of third parties), which caused the personal injury or property damage.

Engineer shall not be liable for special, incidental or consequential damages, including, but not limited to loss of profits, revenue, use of capital, claims of customers, cost of purchased or replacement power, or for any other loss of any nature, whether based on contract, tort, negligence, strict liability or otherwise, by reasons of the services rendered under this Agreement.

11. Opinions of Probable Cost: Since Engineer has no control over the cost of labor, materials or equipment, or over the Contractor(s) method of determining process, or over competitive bidding or market conditions, his/her opinions of probable Project Construction Cost provided for herein are to be made on the basis of his/her experience and qualifications and represent his/her judgement as a design professional familiar with the construction industry, but Engineer cannot and does not guarantee that proposal, bids or the Construction Cost will not vary from opinions of probable construction cost prepared by him/her. If prior to the Bidding or Negotiating Phase, Client wishes greater accuracy as to the Construction Cost, the Client shall employ an independent cost estimator Consultant for the purpose of obtaining a second construction cost opinion independent from Engineer.

12. Governing Law & Dispute Resolutions: This Agreement shall be governed by and construed in accordance with Articles previously set forth by (Item 9 of) this Agreement, together with the laws of the **State of Illinois**.

Any claim, dispute or other matter in question arising out of or related to this Agreement, which can not be mutually resolved by the parties of this Agreement, shall be subject to mediation as a condition precedent to arbitration (if arbitration is agreed upon by the parties of this Agreement) or the institution of legal or equitable proceedings by either party. If such matter relates to or is the subject of a lien arising out of the Engineer's services, the Engineer may proceed in accordance with applicable law to comply with the lien notice or filing deadlines prior to resolution of the matter by mediation or by arbitration.

The Client and Engineer shall endeavor to resolve claims, disputes and other matters in question between them by mediation which, unless the parties mutually agree otherwise, shall be in accordance with the Construction Industry Mediation Rules of the American Arbitration Association currently in effect. Requests for mediation shall be filed in writing with the other party to this Agreement and with the American Arbitration Association. The request may be made concurrently with the filing of a demand for arbitration but, in such event, mediation shall proceed in advance of arbitration or legal or equitable proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order.

The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

13. Successors and Assigns: The terms of this Agreement shall be binding upon and inure to the benefit of the parties and their respective successors and assigns: provided, however, that neither party shall assign this Agreement in whole or in part without the prior written approval of the other.

14. Waiver of Contract Breach: The waiver of one party of any breach of this Agreement or the failure of one party to enforce at any time, or for any period of time, any of the provisions hereof, shall be limited to the particular instance, shall not operate or be deemed to waive any future breaches of this Agreement and shall not be construed to be a waiver of any provision, except for the particular instance.

15. Entire Understanding of Agreement: This Agreement represents and incorporates the entire understanding of the parties hereto, and each party acknowledges that there are no warranties, representations, covenants or understandings of any kind, matter or description whatsoever, made by either party to the other except as expressly set forth herein. Client and the Engineer hereby agree that any purchase orders, invoices, confirmations, acknowledgments or other similar documents executed or delivered with respect to the subject matter hereof that conflict with the terms of the Agreement shall be null, void and without effect to the extent they conflict with the terms of this Agreement.

16. Amendment: This Agreement shall not be subject to amendment unless another instrument is duly executed by duly authorized representatives of each of the parties and entitled "Amendment of Agreement".

17. Severability of Invalid Provisions: If any provision of the Agreement shall be held to contravene or to be invalid under the laws of any particular state, county or jurisdiction where used, such contravention shall not invalidate the entire Agreement, but it shall be construed as if not containing the particular provisions held to be invalid in the particular state, country or jurisdiction and the rights or obligations of the parties hereto shall be construed and enforced accordingly.

18. Force Majeure: Neither Client nor Engineer shall be liable for any fault or delay caused by any contingency beyond their control including but not limited to acts of God, wars, strikes, walkouts, fires, natural calamities, or demands or requirements of governmental agencies.

19. Subcontracts: Engineer may subcontract portions of the work, but each subcontractor must be approved by Client in writing.

20. Access and Permits: Client shall arrange for Engineer to enter upon public and private property and obtain all necessary approvals and permits required from all governmental authorities having jurisdiction over the Project. Client shall pay costs (including Engineer's employee salaries, overhead and fee) incident to any effort by Engineer toward assisting Client in such access, permits or approvals, if Engineer perform such services.

21. Designation of Authorized Representative: Each party (to this Agreement) shall designate one or more persons to act with authority in its behalf in respect to appropriate aspects of the Project. The persons designated shall review and respond promptly to all communications received from the other party.

22. Notices: Any notice or designation required to be given to either party hereto shall be in writing, and unless receipt of such notice is expressly required by the terms hereof shall be deemed to be effectively served when deposited in the mail with sufficient first class postage affixed, and addressed to the party to whom such notice is directed at such party's place of business or such other address as either party shall hereafter furnish to the other party by written notice as herein provided.

23. Limit of Liability: The Client and the Engineer have discussed the risks, rewards, and benefits of the project and the Engineer's total fee for services. In recognition of the relative risks and benefits of the Project to both the Client and the Engineer, the risks have been allocated such that the Client agrees that to the fullest extent permitted by law, the Engineer's total aggregate liability to the Client for any and all injuries, claims, costs, losses, expenses, damages of any nature whatsoever or claim expenses arising out of this Agreement from any cause or causes, including attorney's fees and costs, and expert witness fees and costs, shall not exceed the total Engineer's fee for professional engineering services rendered on this project as made part of this Agreement. Such causes included but are not limited to the Engineer's negligence, errors, omissions, strict liability or breach of contract. It is intended that this limitation apply to any and all liability or cause of action however alleged or arising, unless otherwise prohibited by law.

24. Client's Responsibilities: The Client agrees to provide full information regarding requirements for and about the Project, including a program which shall set forth the Client's objectives, schedule, constraints, criteria, special equipment, systems and site requirements.

The Client agrees to furnish and pay for all legal, accounting and insurance counseling services as may be necessary at any time for the Project, including auditing services which the Client may require to verify the Contractor's Application for Payment or to ascertain how or for what purpose the Contractor has used the money paid by or on behalf of the Client.

The Client agrees to require the Contractor, to the fullest extent permitted by law, to indemnify, hold harmless, and defend the Engineer, its consultants, and the employees and agents of any of them from and against any and all claims, suits, demands, liabilities, losses, damages, and costs ("Losses"), including but not limited to costs of defense, arising in whole or in part out of the negligence of the Contractor, its subcontractors, the officers, employees, agents, and subcontractors of any of them, or anyone for whose acts any of them may be liable, regardless of whether or not such Losses are caused in part by a party indemnified hereunder. Specifically excluded from the foregoing are Losses arising out of the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs, or specifications, and the giving of or failure to give directions by the Engineer, its consultants, and the agents and employees of any of them, provided such giving or failure to give is the primary cause of Loss. The Client also agrees to require the Contractor to provide to the Engineer the required certificate of insurance.

The Client further agrees to require the Contractor to name the Engineer, its agents and consultants as additional insureds on the Contractor's policy or policies of comprehensive or commercial general liability insurance. Such insurance shall include products and completed operations and contractual liability coverages, shall be primary and noncontributing with any insurance maintained by the Engineer or its agents and consultants, and shall provide that the Engineer be given thirty days, unqualified written notice prior to any cancellation thereof.

In the event the foregoing requirements, or any of them, are not established by the Client and met by the Contractor, the Client agrees to indemnify and hold harmless the Engineer, its employees, agents, and consultants from and against any and all Losses which would have been indemnified and insured against by the Contractor, but were not.

When Contract Documents prepared under the Scope of Services of this contract require insurance(s) to be provided, obtained and/or otherwise maintained by the Contractor, the Client agrees to be wholly responsible for setting forth any and all such insurance requirements. Furthermore, any document provided for Client review by the Engineer under this Contract related to such insurance(s) shall be considered as sample insurance requirements and not the recommendation of the Engineer. Client agrees to have their own risk management department review any and all insurance requirements for adequacy and to determine specific types of insurance(s) required for the project. Client further agrees that decisions concerning types and amounts of insurance are

specific to the project and shall be the product of the Client. As such, any and all insurance requirements made part of Contract Documents prepared by the Engineer are not to be considered the Engineer's recommendation, and the Client shall make the final decision regarding insurance requirements.

25. Information Provided by Others: The Engineer shall indicate to the Client the information needed for rendering of the services of this Agreement. The Client shall provide to the Engineer such information as is available to the Client and the Client's consultants and contractors, and the Engineer shall be entitled to rely upon the accuracy and completeness thereof. The Client recognizes that it is impossible for the Engineer to assure the accuracy, completeness and sufficiency of such information, either because it is impossible to verify, or because of errors or omissions which may have occurred in assembling the information the Client is providing. Accordingly, the Client agrees, to the fullest extent permitted by law, to indemnify and hold the Engineer and the Engineer's subconsultants harmless from any claim, liability or cost (including reasonable attorneys' fees and cost of defense) for injury or loss arising or allegedly arising from errors, omissions or inaccuracies in documents or other information provided by the Client to the Engineer.

26. Payment: Client shall be invoiced once each month for work performed during the preceding period. Client agrees to pay each invoice within thirty (30) days of its receipt. The client further agrees to pay interest on all amounts invoiced and not paid or objected to for valid cause within said thirty (30) day period at the rate of eighteen (18) percent per annum (or the maximum interest rate permitted under applicable law, whichever is the lesser) until paid. Client further agrees to pay Engineer's cost of collection of all amounts due and unpaid after sixty (60) days, including court costs and reasonable attorney's fees, as well as costs attributed to suspension of services accordingly and as follows:

    Collection Costs. In the event legal action is necessary to enforce the payment provisions of this Agreement, the Engineer shall be entitled to collect from the Client any judgement or settlement sums due, reasonable attorneys' fees, court costs and expenses incurred by the Engineer in connection therewith and, in addition, the reasonable value of the Engineer's time and expenses spent in connection with such collection action, computed at the Engineer's prevailing fee schedule and expense policies.

    Suspension of Services. If the Client fails to make payments when due or otherwise is in breach of this Agreement, the Engineer may suspend performance of services upon five (5) calendar days' notice to the Client. The Engineer shall have no liability whatsoever to the Client for any costs or damages as a result of such suspension caused by any breach of this Agreement by the Client. Client will reimburse Engineer for all associated costs as previously set forth in (Item 4 of) this Agreement.

27. When construction observation tasks are part of the service to be performed by the Engineer under this Agreement, the Client will include the following clause in the construction contract documents and Client agrees not to modify or delete it:

Kotecki Waiver. Contractor (and any subcontractor into whose subcontract this clause is incorporated) agrees to assume the entire liability for all personal injury claims suffered by its own employees, including without limitation claims under the **Illinois** Structural Work Act, asserted by persons allegedly injured on the Project; waives any limitation of liability defense based upon the Worker's Compensation Act, court interpretations of said Act or otherwise; and to the fullest extent permitted by law, agrees to indemnify and hold harmless and defend Owner and Engineer and their agents, employees and consultants (the "Indemnitees") from and against all such loss, expense, damage or injury, including reasonable attorneys' fees, that the Indemnitees may sustain as a result of such claims, except to the extent that **Illinois** law prohibits indemnity for the Indemnitees' own negligence. The Owner and Engineer are designated and recognized as explicit third party beneficiaries of the Kotecki Waiver within the general contract and all subcontracts entered into in furtherance of the general contract.

28. Job Site Safety/Supervision & Construction Observation: The Engineer shall neither have control over or charge of, nor be responsible for, the construction means, methods, techniques, sequences of procedures, or for safety precautions and programs in connection with the Work since they are solely the Contractor's rights and responsibilities. The Client agrees that the Contractor shall supervise and direct the work efficiently with his/her best skill and attention; and that the Contractor shall be solely responsible for the means, methods, techniques, sequences and procedures of construction and safety at the job site. The Client agrees and warrants that this intent shall be carried out in the Client's contract with the Contractor. The Client further agrees that the Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work; and that the Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to all employees on the subject site and all other persons who may be affected thereby. The Engineer shall have no authority to stop the work of the Contractor or the work of any subcontractor on the project.

When construction observation services are included in the Scope of Services, the Engineer shall visit the site at intervals appropriate to the stage of the Contractor's operation, or as otherwise agreed to by the Client and the Engineer to: 1) become generally familiar with and to keep the Client informed about the progress and quality of the Work; 2) to strive to bring to the Client's attention defects and deficiencies in the Work and; 3) to determine in general if the Work is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Engineer shall not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. If the Client desires more extensive project observation, the Client shall request that such services be provided by the Engineer as Additional and Supplemental Construction Observation Services in accordance with the terms of this Agreement.

The Engineer shall not be responsible for any acts or omissions of the Contractor, subcontractor, any entity performing any portions of the Work, or any agents or employees of any of them. The Engineer does not guarantee the performance of the

Contractor and shall not be responsible for the Contractor's failure to perform its Work in accordance with the Contract Documents or any applicable laws, codes, rules or regulations.

When municipal review services are included in the Scope of Services, the Engineer (acting on behalf of the municipality), when acting in good faith in the discharge of its duties, shall not thereby render itself liable personally and is, to the maximum extent permitted by law, relieved from all liability for any damage that may accrue to persons or property by reason of any act or omission in the discharge of its duties. Any suit brought against the Engineer which involve the acts or omissions performed by it in the enforcement of any provisions of the Client's rules, regulation and/or ordinance shall be defended by the Client until final termination of the proceedings. The Engineer shall be entitled to all defenses and municipal immunities that are, or would be, available to the Client.

29. Insurance and Indemnification: The Engineer and the Client understand and agree that the Client will contractually require the Contractor to defend and indemnify the Engineer and/or any subconsultants from any claims arising from the Work. The Engineer and the Client further understand and agree that the Client will contractually require the Contractor to procure commercial general liability insurance naming the Engineer as an additional named insured with respect to the work. The Contractor shall provide to the Client certificates of insurance evidencing that the contractually required insurance coverage has been procured. However, the Contractor's failure to provide the Client with the requisite certificates of insurance shall not constitute a waiver of this provision by the Engineer.

The Client and Engineer waive all rights against each other and against the Contractor and consultants, agents and employees of each of them for damages to the extent covered by property insurance during construction. The Client and Engineer each shall require similar waivers from the Contractor, consultants, agents and persons or entities awarded separate contracts administered under the Client's own forces.

30. Hazardous Materials/Pollutants: Unless otherwise provided by this Agreement, the Engineer and Engineer's consultants shall have no responsibility for the discovery, presence, handling, removal or disposal of or exposure of persons to hazardous materials/pollutants in any form at the Project site, including but not limited to mold/mildew, asbestos, asbestos products, polychlorinated biphenyl (PCB) or other toxic/hazardous/pollutant type substances.

Furthermore, Client understands that the presence of mold/mildew and the like are results of prolonged or repeated exposure to moisture and the lack of corrective action. Client also understands that corrective action is a operation, maintenance and repair activity for which the Engineer is not responsible.

AGENDA MEMO
Municipal Services Committee
December 12, 2012

ISSUE STATEMENT

A discussion regarding to date budget comparisons to actual expenditures.

BACKGROUND/HISTORY

The Municipal Services Committee requested a mid-year review regarding actual expenditures in comparison to the FYE13 Budget. Attached and labeled as pages 3-4 is a summary of capital project expenditures and larger budget items. The spreadsheets have been formatted with labeled columns and rows for easy reference. The columns are labeled as follows:

A. Item or Project-Identifies the designated Project or Program
B. Account Number-Identifies the designated account for the project. Please note several projects/programs share the same account numbers. (e.g. Drainage Improvements)
C. Amount Budgeted-Represents the City Council approved expenditure allocation as of May 1, 2012.
D. City Council Approved Funds-Represents the approved Committee and City Council expenditure for the project or program and is based on the results of a competitive bid/quote through an Agenda Memo.
E. Actual Expenditure-Represents the final cost of a project. Please note there are several accounts where total expenses will not be finalized until April 30, 2013, e.g. Street Light Maintenance, Rock Salt (pending winter conditions), 2013 Road Maintenance Core Engineering Agreement.
F. Difference Between Actual Expenditure (Column E) and City Council Approved (Column D)-This item reflects, in dollars, the difference between the final expenditure and City Council approved expenditure.
G. Difference Between Actual Expenditure (Column E) and City Council Approved (Column D)-This item reflects, as a percentage, the difference between the final expenditure and City Council approved expenditure.
H. Difference Between Amount Budgeted (C) and Actual Expenditure (E) Funds Available-This item represents the funds available.
I. Difference Between Amount Budgeted (C) and Actual Expenditure (E) Funds Available-This item represents the percentage available.
J. Comments-Presents Staffs Comments

The Municipal Services Department oversees an expenditure budget of approximately $8.5 to $10 Million dollars annually. Please note that staff begins project estimates six to eight months prior to the fiscal year, and maintains a conservative approach towards estimating for budgets. City staff envisions that many of our bid/quote estimates for FYE 14 will have a 0-5% increase due to the current economic conditions. Staff is also suggesting that the bid process for the 2013 Road Maintenance Program and Concrete Program continue to be bid in the first quarter of 2013. This year City staff was able to identify cost saving opportunities on various projects and equipment. Many of the department's projects are unit based and unforeseen field conditions could occur therefore dictating changes in quantities and material that affect the bottom line.

STAFF RECOMMENDATION

Staff will continue to review estimating practices and aggressively seek economies of scale for products and services. Additional feedback and discussion to be presented by the Committee.

ALTERNATE DECISION

Item is for discussion only and/or as recommended by the Committee.

DECISION MODE

None

1	A	B	C	D	E	F	G	H	I	J	K
2	Item or Project	Account No.	Amount Budgeted	City Council Approved Funds	Actual Expenditure	Difference Between Actual Expenditure (E) and City Council Approved (D) Presented as Funds	Difference Between Actual Expenditure (E) and City Council Approved (D) Presented as a Percentage	Difference Between Amount Budgeted (C) and Actual Expenditure (E) Funds Available	Difference Between Amount Budgeted (C) and Actual Expenditure (E) Percentage	Contingency-Not Used	Comments
3	Barricades - Fourth of July	01-30-4257	$ 1,000.00	$ 1,000.00	$ 400.00	$ 600.00	60.00%	N/A	N/A	N/A	COST SAVINGS REALIZED DUE TO COMPETITIVE QUOTES
4	Barricades - Darien Fest	01-30-4257	$ 1,000.00	$ 1,000.00	$ 874.00	$ 126.00	12.60%	N/A	N/A	N/A	COST SAVINGS REALIZED DUE TO COMPETITIVE QUOTES
5	Total		$ 2,000.00	$ 2,000.00	$ 1,274.00	$ 726.00	36.30%	$ 726.00	36.30%	N/A	
6											
7	Tree and Stump Removal	01-30-4375	$ 127,702.00	$ 127,702.00	$ 127,702.00	$ -	0.00%	$ -	0.00%	N/A	STAFF ANTICPATES THAT ALL FUNDS WILL BE EXPENEDED DUE TO THE EMERALD ASH BORER
8											
9	Tub Grinder	01-30-4243	$ 5,000.00	$ 5,000.00	$ 5,337.50	$ (337.50)	-6.75%	$ (337.50)	-6.75%	N/A	Expenses-Revenue (1,350)
10											
11	Sidewalk Program	25-35-4380	$ 67,630.00	$ 67,630.00	$ 67,500.00	$ 130.00	0.19%	$ 130.00	0.19%	N/A	
12	Curb and Gutter Program	25-35-4383	$ 319,127.00	$ 319,127.50	$ 282,683.00	$ 36,444.50	11.42%	$ 36,444.00	11.42%	N/A	Quantities reduced due to layout in conjunction with the road program
13	Total		$ 386,757.00	$ 386,757.50	$ 350,183.00	$ 36,574.50	9.46%	$ 36,574.00	9.46%	N/A	
14											
15	Crack Seal/Fill Program	25-35-4382	$ 92,400.00	$ 91,476.00	$ 91,476.00	$ -	0.00%	$ 924.00	1.00%	N/A	NO COMMENTS
16											
17	5 Welcome Sign replacements	25-35-4815	$ 108,000.00	$ 108,000.00	$ 108,000.00	$ -	0.00%	$ -	0.00%	N/A	NO COMMENTS
18											
19	Drainage Impv Project - Royal Swan & Lakeridge	25-35-4376	$ 29,000.00	$ 29,000.00	$ 30,640.24	$ (1,640.24)	-5.66%	$ (1,640.24)	-5.66%	N/A	
20	Drainage Impv Project - 6701 Western Ave	25-35-4376	$ 15,000.00	$ 15,000.00	$ 10,363.72	$ 4,636.28	30.91%	$ 4,636.28	30.91%		
21	Drainage Impv Project - Creekside-So. of Kearney	25-35-4376	$ 28,543.00	$ 28,543.00	$ 10,367.04	$ 18,175.96	63.68%	$ 18,175.96	63.68%	REDUCED QUANTITIES SCOPE OF WORK REVISED DUE TO FIELD TILE IDENTIFIED	
22	Drainage Impv Project - 8400 block of Gleneyre	25-35-4376	$ 10,300.00	$ 10,300.00	$ 6,551.00	$ 3,749.00	36.40%	$ 3,749.00	36.40%	MANUFACTURER PROVIDED STRUCTURES AND NO CONTINGENCY USED	
23	Drainage Impv Project - 1616 Clare Ct	25-35-4376	$ 15,300.00	$ 15,300.00	$ 5,550.00	$ 9,750.00	63.73%	$ 9,750.00	63.73%	CURB AND GUTTER AND ROAD PATCH COMPLETED OF ROAD MAINT	
24	Drainage Impv Project - 8000 block Sawyer	25-35-4376	$ 27,600.00	$ 27,600.00	$ 23,529.00	$ 4,071.00	14.75%	$ 4,071.00	14.75%	RESTORATION REDUCED AND COMPLETED IN HOUSE	
25	Drainage Impv Project - Poplar Ln	25-35-4376	$ 146,500.00	$ 146,500.00	$ 134,882.50	$ 11,617.50	7.93%	$ 11,617.50	7.93%	CONTINGENCY NOT USED	
26	Drainage Impv Project - Bentley Ave	25-35-4376	$ 73,800.00	$ 73,800.00	$ 51,450.00	$ 22,350.00	30.28%	$ 22,350.00	30.28%	CONTINGENCY NOT USED AND SCOPE OF WORK REDUCED DUE TO FIELD CHANGES	
27	Drainage Impv Project - Roger Rd	25-35-4376	$ 182,500.00	$ -	$ -	$ -	N/A			N/A	NOT APPROVED
28	Drainage Impv Project - Eleanor (69th-Holly)	25-35-4376	$ 170,000.00	$ -	$ -	$ -	N/A			N/A	NOT APPROVED
29	Drainage Impv Project - Brookbank	25-35-4376	$ 186,000.00	$ -	$ -	$ -	N/A			N/A	NOT APPROVED
30	Drainage Project Total	25-35-4376	$ 884,543.00	$ 346,043.00	$ 273,333.50	$ 72,709.50	21.01%	$ 611,209.50	69.10%		
31											
32	Road Program-Capital Impv	25-35-4855	$ 1,254,000.00	$ 1,253,108.49	$ 1,179,064.33	$ 74,044.16	5.91%	$ 74,935.67	5.98%	SAVINGS REALIZED DUE TO A SOLID BASE REDUCING UNDETRCUT MATERIAL	
33	Base Repair	25-35-4855	$ 74,250.00	$ 74,250.00	$ 75,289.50	$ (1,039.50)	-1.40%	$ (1,039.50)	-1.40%	FIELD CONDITIONS REQUIRED ADDITIONAL QUANTITIES	
34	Public Works Parking Lot	25-35-4855	$ 178,000.00	$ 174,849.30	$ 152,590.97	$ 22,258.33	12.73%	$ 25,409.03	14.27%	SAVINGS REALIZED DUE TO SOLID BASE	
35	Total Road Program		$ 1,506,250.00	$ 1,502,207.79	$ 1,406,944.80	$ 95,262.99	6.34%	$ 99,305.20	6.59%		
36											
37	*Pavement Corings (2013 Pavement Program)*	*01-30-4325*	*$ 13,600.00*	*$ 13,500.00*	$ 12,243.40	$ 1,256.60	9.31%	$ 1,356.60	9.98%	*N/A*	*NO COMMENTS*
38	*Contract and Bid Specifications-December-January*	*01-30-4325*	*$ 30,500.00*	*$ 30,500.00*	$ 30,426.00	$ 74.00	0.24%	$ 74.00	0.24%	*N/A*	*NO COMMENTS*
39	*Total 2013 Road Engineering*		*$ 44,100.00*	*$ 44,000.00*	*$ 42,669.40*	*$ 1,330.60*	3.02%	*$ 1,430.60*	*3.24%*	*N/A*	*NO COMMENTS*
40											
41	Fertilization Program - 75th St Turf Areas	01-30-4350	$ 16,960.00	$ 11,804.35	$ 11,804.35	$ -	0.00%	$ 5,155.65	30.40%	REDUCED COST DUE TO 75TH CONSTRUCTION	
42	Fertilization Program - 75th St Trees	01-30-4350	$ -	$ -	$ -	N/A	N/A	N/A	N/A	N/A	*NO COMMENTS*
43	Maintenance - Water Plants	02-50-4223	$ 2,151.43	$ 2,151.43	$ 2,151.43	$ -	0.00%	$ -	0.00%	N/A	*NO COMMENTS*
44	Maintenance - City Hall-FERTILIZATION ONLY	01-10-4227	*$ 358.57*	$ 358.57	$ 358.57	$ -	0.00%	$ -	0.00%	N/A	*NO COMMENTS*
45	Total Fertilization Program		$ 19,470.00	$ 14,314.35	$ 14,314.35	$ -	0.00%	$ 5,155.65	26.48%	N/A	*NO COMMENTS*
46											
47	1 ton dump Truck (Unit 112)	01-30-4815	$ 66,000.00	$ 64,398.00	$ 64,398.00	$ -	0.00%	$ 1,602.00	2.43%	N/A	*NO COMMENTS*
48											
49	Truck (Unit 111)	01-30-4815	$ 53,500.00	$ 49,431.00	$ 49,341.00	$ 90.00	0.18%	$ 4,159.00	7.77%	N/A	*NO COMMENTS*
50	Truck (Unit 111)	12-51-4815	$ 53,500.00	$ 49,431.00	$ 49,341.00	$ 90.00	0.18%	$ 4,159.00	7.77%	N/A	*NO COMMENTS*
51	Total Truck (Unit 111)		$ 107,000.00	$ 98,862.00	$ 98,682.00	$ 180.00		$ 8,318.00	7.77%		

1	A	B	C	D	E	F	G	H	I	J	K
2	Item or Project	Account No.	Amount Budgeted	City Council Approved Funds	Actual Expenditure	Difference Between Actual Expenditure (E) and City Council Approved (D) Presented as Funds	Difference Between Actual Expenditure (E) and City Council Approved (D) Presented as a Percentage	Difference Between Amount Budgeted (C) and Actual Expenditure (E) Funds Available	Difference Between Amount Budgeted (C) and Actual Expenditure (E) Percentage	Contingency-Not Used	Comments
52											
53	Replacement Pick-Up Truck Unit 600	01-30-4815	$ 25,000.00	$ 22,769.00	$ 22,769.00	$ -	0.00%	$ 2,231.00	8.92%	N/A	*NO COMMENTS*
54											
55	Plotter Replacement	01-30-4815	$ 7,500.00	$ 6,897.50	$ 6,897.50	$ -	0.00%	$ 602.50	8.03%	N/A	
56	Plotter Replacement	02-50-4225	$ 7,500.00	$ 6,897.50	$ 6,897.50	$ -	0.00%	$ 602.50			
57	Total Plotter Replacement		$ 15,000.00	$ 13,795.00	$ 13,795.00	$ -		$ 1,205.00			
58											
59	SCADA System Comm Upgrade	02-50-4815	$ 8,800.00	$ 2,970.00	$ 2,970.00	$ -	0.00%	$ 5,830.00	66.25%	N/A	NEW VENDOR IDENTIFIED WITH SIGNIFICANT COST SAVING OPPURTUNITY
60											
61	Electrical Housekeeping Plant 3, 4 & 5	02-50-4815	$ 25,000.00	$ 28,000.00	$ 28,000.00	$ -	0.00%	$ (3,000.00)	-12.00%	N/A	FINAL COST TO BE DETERMINED UPON ENGINEER REVIEW
62											
63	Chlroine Scale	02-50-4815	$ 3,500.00	$ 3,500.00	$ 3,700.00	$ (200.00)	-5.71%	$ (200.00)	-5.71%	N/A	COMPONENT COSTS INCREASED FROM 2011 ESTIMATE
64											
65	3-inch Hydraulic Submersible Pump	02-50-4815	$ 2,065.00	$ 1,078.00	$ 1,078.00	$ -	0.00%	$ 987.00	47.80%	N/A	INTERNET SALE REALIZED
66											
67	Water Main Insertion Valves - 4 locations	*12-51-4818*	$ 75,000.00	$ 14,500.00	$ 14,500.00	$ -	0.00%	$ 60,500.00	80.67%	N/A	INSERTION VALVES OR OUTSOURCING NOT REQUIRED
68											
69	Downers Grove Coop	*12-51-4818*	$ 35,000.00	$ 35,000.00	$ 1,000.00	$ 34,000.00	97.14%	$ 34,000.00	97.14%	N/A	VALVES WERE IDENTIFIED TO DOWNERS GROVE
70											
71	Fuel Pumps R & R	01-30-4223	$ 9,000.00	$ 7,850.00	$ 7,850.00	$ -	0.00%	$ 1,150.00	12.78%	N/A	COST SAVINGS REALIZED DUE TO COMPETITIVE QUOTES
72	Fuel Pumps R & R	02-50-4223	$ 9,000.00	$ 7,850.00	$ 7,850.00	$ -	0.00%	$ 1,150.00	12.78%	N/A	COST SAVINGS REALIZED DUE TO COMPETITIVE QUOTES
73	Total Fuel Pumps R & R		$ 18,000.00	$ 15,700.00	$ 15,700.00	$ -		$ 2,300.00	12.78%		
74											
75	Rear Yard Drainage Project-**$16,000**										
76	1414-1418 77th 1409, 1417 Sequoia	01-30-4374		$ 12,004.42	$ 12,004.42	$ -				N/A	*NO COMMENTS*
77	Resident Reimbursement			$ (7,004.40)	$ (7,004.40)	$ -					
78	Project Cost 1414-1418 77th 1409, 1417 Sequoia			$ 5,000.02	$ 5,000.02	$ -					
79											
80	Harvest Ln - Highcrest Rd	01-30-4374		$ 5,705.03	$ 5,705.03	$ -				N/A	*NO COMMENTS*
81	Resident Reimbursement			$ (1,000.00)	$ (1,000.00)	$ -					
82	Project Cost - Harvest Ln - Highcrest Rd			$ 4,705.03	$ 4,705.03	$ -					
83											
84	Exner-Clemens	01-30-4374		$ 6,000.00	$ 6,000.00	$ -				N/A	TO BE COMPLETED BY APRIL 2013
85	Resident Reimbursement			$ (1,000.00)	$ (1,000.00)	$ -					
86	Project Cost - Harvest Ln - Highcrest Rd			$ 5,000.00	$ 5,000.00	$ -					
84	Grand Total Rear Yard Drainage Projects	01-30-4374	$ 16,000.00	$ 14,705.05	$ 14,705.05	$ -	0.00%	$ 1,294.95	8.09%	N/A	
85											
86	Street Light Maintenance & Energy	01-30-4359	$ 80,200.00	$ 80,200.00	$ 80,200.00	$ -	0.00%	$ -	0.00%	N/A	
87	Street Light Installation	01-30-4359	$ 14,000.00	$ 14,000.00	$ -	$ 14,000.00	100.00%	$ 14,000.00	100.00%	N/A	NO REQUESTS FORAWRDED
88	Total		$ 94,200.00	$ 94,200.00	$ 80,200.00	$ 14,000.00	14.86%	$ 14,000.00			
89											
90	Road Salt	03-60-4249	$ 180,000.00	$ 178,360.00	$ 61,740.00	$ 116,620.00	65.38%	$ 118,260.00	65.70%	N/A	SAVINGS BASED ON CONTINGENCY FOR SEASON
91	Darien Park District - Reimbursable	REIMBURSED	$ 17,150.00	$ 16,807.00	$ 16,807.00	$ -	0.00%	$ 343.00	2.00%	N/A	CO-OP
92	District 66	REIMBURSED	$ 514.50	$ 514.50	$ 514.50	$ -	0.00%	$ -	0.00%	N/A	CO-OP
93	Total		$ 197,664.50	$ 195,681.50	*$ 79,061.50*	$ 116,620.00	59.60%	$ 118,603.00	60.00%		
94	**Total Projects Summary**		**$ 3,864,451.50**	**$ 3,232,659.19**	**$ 2,861,793.10**	**$ 370,866.09**	11.47%	**$ 1,002,658.40**	25.95%	**N/A**	

AGENDA MEMO
Municipal Services Committee
December 12, 2012

ISSUE STATEMENT

Discussion followed by Recommendation-The Committee is requested to review the revised Emerald Ash Borer action plan.

BACKGROUND

Attached is a copy of the Emerald Ash Borer Report as dated July 23, 2012- labeled as Attachment 1. At the Budget Workshop held on October 24, 2012, the Committee requested the following additional information:

1. Survey-Action Plan of surrounding government agencies
   Attached please find a recent comprehensive survey labeled as Attachment 2 and provided by the Morton Arboretum. Of the 78 Municipalities surveyed 18, (23%) are currently treating or will be treating their Ash trees with the Treeage product. The survey also suggests that an additional 12 municipalities for a total of 30, (38%) will be treating their Ash Trees.
2. Opinions-Recommendations from Commercial Arborists
   Attached and labeled as Attachment 3-A and B are opinions from two vendors-Homer Tree Care and Autumn Save a Tree & Save a Lawn. While both arborists agree there is merit to saving the Ash Trees the following points need to be considered:
   A. Timing-Timing is everything. If the EAB is not treated prior to heavy infestation it is not worth saving the tree. The Staff has determined that each tree prior to treatment will be evaluated for canopy dieback in Spring. Should the tree display more than 40-45% dieback the tree will not be treated and marked for removal.
   B. Longevity-the proposed program calls for the treatment on a biennial basis over three cycles. The program is currently scheduled for 2013, 2015,2017. It is unknown if the final cycle of treatments will eradicate the population or additional treatments will be required.
3. Long Term Care-Time Table for the Eradication of the Emerald Ash Borer
   The average life span of an Ash Tree is approximately 250 years, pending the species. Theoretically, it is suggested that trees left untreated will die and the EAB will be starved for a food source thereby justifying the abovementioned treatment program. It is estimated that trees left untreated will die within 5 years. Currently there is no supporting evidence that additional treatments will not be required after the final cycle in 2017, as proposed above.

In summary the proposed treatments would be performed in-house at the following costs and are further detailed within Att 1:
Spring 2013 April-June Cycle 1- **$179,399.92**
Spring 2015 April-June Cycle 2- $176,121.43
Spring 2017 April-June Cycle 3- $176,121.43
Spring 2019 To be determined
Total Treatment Cost $531,642.77

Spring 2013-Contingency-Removal of Ash trees $ **$75,000**

Spring 2013-Budget Consideration **$254,400**

It is anticipated that there will be approximately 125 trees, (5%) that will require removal at an estimated cost of $75,000. Please note that Staff will identify whether the trees will be treated or removed in April through May. The review will be based upon percentage of canopy dieback and the aesthetics of the tree. The proposed program would be completed in-house and will require hiring a temporary employee for a season.

STAFF RECOMMENDATION

Staff is requesting funding consideration for the 2013/14 Budget-Emerald Ash Borer action plan as proposed.

ALTERNATE CONSIDERATION

As directed by the Municipal Services Committee.

DECISION MODE

Pending discussion, this item will be presented at the upcoming Budget Workshop.

CITY OF DARIEN

In the County of DuPage and the State of Illinois
Incorporated 1969

TO: Municipal Services Committee
Bryon Vana-City Administrator

FROM: Daniel Gombac, Municipal Services Director

DATE: July 23, 2012

SUBJECT: Emerald Ash Borer-Executive Summary Update-Program Treatment Cost Analysis

EXECUTIVE SUMMARY

Background

The Emerald Ash Borer (EAB) is an invasive species from Asia that arrived in the United States in wood packing material. The pest was first detected in Michigan in 2002 and has subsequently spread to Canada and a number of other states including northern Illinois. The pest kills all species of North American ash trees and has killed an estimated 30 million trees to date. To date, the EAB has affected 12 Ash trees in the City of Darien. When it comes to the potential devastation of EAB, there is a lot at stake for the City. There are an estimated 2600 ash trees in the City's parkways and makes up an estimated 30% of urban trees.

This updated plan identifies new strategies based on the science that has been advanced since the original response plan was developed several years ago. With this new information and plan, staff is being proactive to the long-term management of the EAB.

Effectiveness

The effectiveness of the Tree-Age product is well above the 92 percentile. Attached and labeled as Attachment D is a study conducted through the International Society of Arboriculture. The study evaluates the effectiveness of injections and drenching during a period of 2005-2010.

When the researchers talk about percent effectiveness they are referring to number of larvae controlled. For example, say it takes 1000 larvae to kill a tree over time. Inject the tree in 2012 and kill 990 of the insects who tried to feed leaving only 10. If the 2nd year was only 92 % effective, there would still not be enough larvae to kill the tree.

Regarding the analysis for 3 cycles/applications or in 6 years, it is highly anticipated that the EAB would be eradicated due to the food chain being depleted. This assumes that all untreated ash trees within private residences, neigbboring towns, forest preserves have died off due to not being treated.

Attached and labeled as Attachment E is an additional study conducted for insecticide options for protecting ash trees. The study was conducted through the Ohio State University, Michigan State University, Purdue University, University of Wisconsin-Madison, and University of Illinois.

Attached please find two colored brochures provided through Arborjet providing information on management and treatment facts for the Emerald Ash Borer.

The Response Plan

The staff has devised a response plan for emerald ash borer, or EAB. The plan was created through updated industry information and the proposed plan includes a program to apply the Tree-Age insecticide. The plan is based on the application of the abovementioned insecticide once every two years for three cycles.

Goal

The goal of the Department is to treat the entire City owned inventory of healthy ash trees. The City will also continue to educate residents with private property trees and review potential treatment programs. The City will also work with the Darien Park District to establish goals. The Staff is cognizant to the fact that there will be Ash trees that will not be able to be saved and will require removal. The goal of the department was to begin the treatment in April of 2013, pending budget allocation.

Objective

The objective of the plan is to eliminate the destructive effects of EAB on Darien's Ash trees. Ash trees are a quality of life benefit and provide a cost benefit of approximately $185.00 per year, based upon a 20-inch diameter tree.

Program Costs

Attached is a cost analysis spreadsheet labeled as Attachment A. The analysis provides cost comparisons as they relate to treatments, removals, benefits, and a program cost summary. Staff is requesting to move forward with the program as outlined under Column B-F Rows 22-27. The cost for the program has been estimated as follows:

Cycle 1 Year 2012/13	$179,400.00
Cycle 2 Year 2014/15	$176,200.00
Cycle 3 Year 2016/17	$176,200.00
Total Cost over 6 years	$531,800.00

The proposed funding for the program was not budgeted for FYE13. Staff is currently reviewing fund balances through the Capital Projects Fund and Motor Fuel Tax Funds. Staff has been in contact with IDOT regarding the use of MFT funds for EAB. The MFT funds may not be currently used for the insecticide treatment of parkway trees. The Illinois Department of Transportation will be discussing the proposed funding use during the next several months for MFT funding consideration. This item has been discussed with the City Administrator and will be forwarded for Budget consideration at the October workshop.

Please let me know if there are any further questions or comments.

Below, please find the summary descriptions as they relate to the attached spreadsheet.

Spreadsheet Summary Descriptions

Column B - Rows 2-9 *Inventory* Identifies 5 tree sections. The City is broken down into 5 quadrants for tree maintenance programs. See Map labeled as Attachment B.

Column C - Rows 2-9 Identifies the *Total No of Trees* per section

Column D - Rows 2-9 Identifies the No *of Ash Trees* per section

Column E - Rows 2-9 Identifies the *Difference of Other Tree Species*

Column F - Rows 2-9 Identifies the *Percentage of Ash Trees to Total Trees* per section

Column G - Rows 2-9 Identifies the *Total Tree Diameter Inches* (Diameter By Height-DBH) of ash trees per section. The measurement is based on a window survey and limited ash trees have been field measured.

Column H - Rows 2-10 Identifies the amount of *Tree-Age Application Rate* in liters required to treat the tree for the first cycle per section.

Column I - Rows 2-9 Identifies the *Cost Per Liter* per section for the first cycle.

Column J - Rows 2-9 Identifies the total no of *Arbor Plugs* required to be placed into the tree after the injection

Column K - Rows 2-9 Identifies the costs for the plugs

The following items relate to equipment required to complete the program.

Column B - Rows 11-16 Identifies the *Equipment Required* and is considered a one-time expense with the exception of the needles and cleaner.

Column C - Rows 11-16 Identifies the *Quantity Required*

Column D - Rows 11-16 Identifies the *Unit Cost* for each item

Column E - Rows 11-16 Identifies the *Total Cost* for each item

The following items relate to the labor force required to complete the program. Staff has reviewed outsourcing the service and has determined that with the City Arborist on staff and the ability to hire on a temporary employee there is an economy of executing the program in-house. The City Arborist would be committed to leading and performing the applications with the assistance of a temporary employee. The following items relate to the workforce required to complete the program.

Column B - Rows 17-18 Identifies the *Workforce Summary* required

Column C - Rows 17-18 Identifies the totals for the *No of Trees* targeted

Column D - Rows 17-18 Identifies the *Hours Per Tree* for the application

Column E - Rows 17-18 Identifies the *Total Hours Required* for the program

Column F - Rows 17-18 Identifies the *No of Working Weeks Required* for the program

Column F - Rows 17-18 Identifies the *No of Working Days Required* for the program

The next item reviews the cost of the treatment program. The program will require a total of three applications/cycles. The application/cycle shall be applied once every two years. The program would be scheduled as follows:

Cycle 1 - 2012/13 Application

Cycle 2 - 2014/15 Application

Cycle 3 - 2016/17 Application

The following items relate to the Cost Summary required to complete the multi-cycle program and would be completed In-House by staff.

Column B - Rows 22-27 Identifies the items required to complete the program and include equipment, supplies and temporary labor.

Column C - Rows 22-27 Identifies the costs to complete the program for Cycle 1 and is anticipated to be completed in 2012 or 2013. Cycle 1 cost is estimated at $179,400

Column D - Rows 22-27 Identifies the costs to complete the program for Cycle 2 and is anticipated to be completed in 2014 or 2015. Cycle 2 cost is estimated at $176,200

Column E - Rows 22-27 Identifies the costs to complete the program for Cycle 3 and is anticipated to be completed in 2016 or 2017. Cycle 3 cost is estimated at $176,200

Column F- Rows 22-27 Identifies the costs to complete the program for Cycles 1-3 at a total cost of approximately $531,800

The next item relates to the benefits of mature Ash trees and provides the following benefits:

- Stormwater
- Electricity
- Air Quality
- Property Values
- Natural Gas
- CO2

The average Ash tree in the city provides a cost benefit of approximately $185.00 per year. The following items relate to the Cost Benefit of Ash Trees.

Column B - Rows 28-29 Identifies the Cost Benefit of Ash Trees and Support Documentation. The Support Documentation is labeled as Attachment C.

Column C - Rows 28-29 Identifies the *No of Trees*

Column D - Rows 28-29 Identifies the *Cost Benefit Per Tree*

Column E - Rows 28-29 Identifies the *Total Cost Benefit*

The next item compares removal costs if an EAB infestation affected the City of Darien. The following exercise demonstrates the cost of removal, restoration and replacement costs.

Column B - Row 31-38 *Removal Costs* Identifies 5 tree sections. The City is broken down into 5 quadrants for tree maintenance programs.

Column C - Rows 31-38 Identifies the *Total No of Ash Trees* per section

Column D - Rows 31-38 Identifies the *Total Tree Diameter Inches* (Diameter By Height-DBH) of ash trees per section. The measurement is based on a window survey and limited ash trees have been field measured.

Column E - Rows 31-38 Identifies the *Removal Cost* based upon a current contract unit price of $30.00 per inch.
Column F - Rows 31-38 Identifies the *Stump Grinding Cost* based upon a current contract unit price of $90.00 per stump.

Column G - Rows 31-38 Identifies the *Landscaping Restoration Cost* as lump sum cost of $50.00 per location.

Column H - Rows 31-38 Identifies the *Replacement Cost for a 4-inch Caliper Tree* at a unit cost of $350.00 per location.

Column I - Rows 31-38 Identifies the *Total Replacement Cost* for each section.

Column J - Rows 31-38 Identifies the *5 Year Total Replacement Cost* based on a yearly cost.

The next item provides program Outsourcing costs of the 3 cycles based on the existing inventory. Again, each cycle is completed once every two years. Below is the breakdown of the spreadsheet.

Column B - Rows 40-47 *Inventory* Identifies 5 tree sections. The City is broken down into 5 quadrants for tree maintenance programs.

Column C - Rows 40-47 Identifies the No *of Ash Trees* per section

Column D - Rows 40-47 Identifies the *Total Tree Diameter Inches* (Diameter By Height-DBH) of ash trees per section. The measurement is based on a window survey and limited ash trees have been field measured.

Column E - Rows 40-47 Identifies the *Treatment Cost* per section

Column F - Rows 40-47 Identifies the *Cycle One Cost 2012/13*

Column G - Rows 40-47 Identifies the *Cycle Two Cost 2014/15*

Column H - Rows 40-47 Identifies the *Cycle Three Cost 2016/17*

Column I - Row 47 Identifies the *Total Outsourced Program Cost* over the life of the program.

A	B	C	D	E	F	G	H	I	J	K
2	Inventory	Total No of Trees	No of Ash Trees	Difference (Other Tree Species)	Percentage of Ash Trees to Total Trees	Total Tree Diameter Inches (DBH) (Average is 20 inch DBH)	Tree-Age Chemical-Application Rate 48.2 Milliliters Per Inch	Cost Per Liter	Arbor Plugs - 9 Per Tree	Plug Costs
3							5.40	$ 494.00		$ 0.45
4	Section No 1	1594	20	1574	1.25%	400.00	2,160.00	$ 1,067.04	$ 180.00	$ 81.00
5	Section No 2	1869	631	1238	33.76%	12,620.00	68,148.00	$ 33,665.11	$ 5,679.00	$ 2,555.55
6	Section No 3	1577	507	1070	32.15%	10,140.00	54,756.00	$ 27,049.46	$ 4,563.00	$ 2,053.35
7	Section No 4	1994	659	1335	33.05%	13,180.00	71,172.00	$ 35,158.97	$ 5,931.00	$ 2,668.95
8	Section No 5	1922	796	1126	41.42%	15,920.00	85,968.00	$ 42,468.19	$ 7,164.00	$ 3,223.80
9	Totals	8956	2613	6343	29.18%	52,260.00	282,204.00	$ 139,408.78	$ 23,517.00	$ 10,582.65
10	Liters Required						282.20			

11	Equipment Costs	Quantity	Unit Cost	Total Cost
12	Arborjet Hydraulic Kit	1	$ 2,900.00	$ 2,900.00
13	Secondary Air Pack	1	$ 255.00	$ 255.00
14	Arborjet Viper Needle (2 Pack)	1	$ 28.45	$ 28.45
15	Clean-Jet Cleaner	12	$ 7.92	$ 95.04
16	Total Equipment Cost			$ 3,278.49

17	Workforce Summary	No of Trees	Hours Per Tree	Total Hours Required	No of Working Weeks Required	No of Working Days Required
18	City Arborist	2613	0.5	1306.5	32.6625	163.31
19	Labor-Temp	No of Temp Help	Total Hours Required	Rate of Pay	Unit	Total Cost
20	Temporary Helper	1	1306.5	20	Hourly	26,130.00
21	Proposed In House program					

22	Cost Summary for 2013-2019	Cycle 1-Year 1 2013	Cycle 2 - Year 3 2015	Cycle 3 - Year 5 2017	Total Program Cost	
23	Insecticide	$ 139,408.78	$ 139,408.78	$ 139,408.78	$ 418,226.33	YEAR 2019
24	Plugs	10582.65	$ 10,582.65	$ 10,582.65	$ 31,747.95	TO BE DETERMINED
25	Equipment	$ 3,278.49	$ -	$ -	$ 3,278.49	
26	Labor-Temporary Help	$ 26,130.00	$ 26,130.00	$ 26,130.00	$ 78,390.00	
27	Cost	$ 179,399.92	$ 176,121.43	$ 176,121.43	$ 531,642.77	

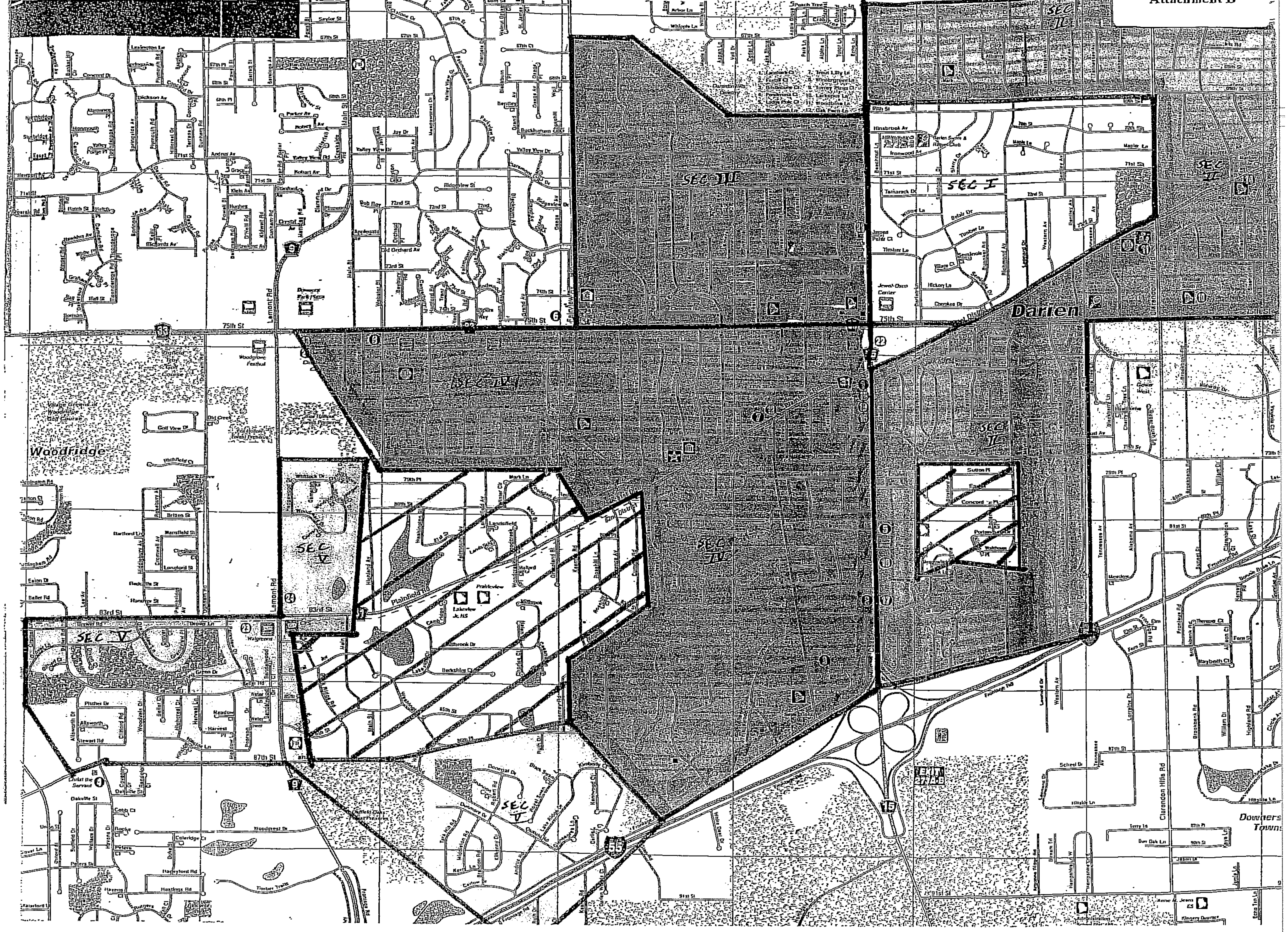
28	Cost benefit of Ash Trees	No of Trees	Cost Benefit Per Tree	Total Cost Benefit
29	*See Supporting Documentation*	2,613.00	$ 185.00	$ 483,405.00

30	B	C	D	E	F	G	H	I	J	K
31	Removal Costs	No of Ash Trees	Total Tree Diameter Inches (DBH) (Average is 20 inch DBH)	Removal Cost	Stump Grinding Cost	Restoration Cost	Replacement Cost 4-inch Calliper	Total Replacement Cost	5 Year Replacement Cost Cost per Year	
32				$ 30.00	$ 90.00	$ 50.00	$ 350.00			
33	Section No 1	20	400.00	$ 12,000.00	$ 1,800.00	$ 1,000.00	$ 7,000.00	$ 21,800.00	$ 4,360.00	
34	Section No 2	631	12,620.00	$ 378,600.00	$ 56,790.00	$ 31,550.00	$ 220,850.00	$ 687,790.00	$ 137,558.00	
35	Section No 3	507	10,140.00	$ 304,200.00	$ 45,630.00	$ 25,350.00	$ 177,450.00	$ 552,630.00	$ 110,526.00	
36	Section No 4	659	13,180.00	$ 395,400.00	$ 59,310.00	$ 32,950.00	$ 230,650.00	$ 718,310.00	$ 143,662.00	
37	Section No 5	796	15,920.00	$ 477,600.00	$ 71,640.00	$ 39,800.00	$ 278,600.00	$ 867,640.00	$ 173,528.00	
38	Totals	2613	52260	$ 1,567,800.00	$ 235,170.00	$ 130,650.00	$ 914,550.00	$ 2,848,170.00	$ 569,634.00	
39	OUTSOURCED COSTS									

40	Inventory	No of Ash Trees	Total Tree Diameter Inches (DBH) (Average is 20 inch DBH)	Treatment Cost	Cycle One 2013 Cost	Cycle Two 2015 Cost	Cycle Three 2017 Cost	Total Program Cost
41				$ 5.50		$ 5.50	$ 5.50	
42	Section No 1	20	400	$ 2,200.00	$ 2,200.00	$ 2,200.00	$ 2,200.00	
43	Section No 2	631	12,620	$ 69,410.00	$ 69,410.00	$ 69,410.00	$ 69,410.00	
44	Section No 3	507	10,140	$ 55,770.00	$ 55,770.00	$ 55,770.00	$ 55,770.00	
45	Section No 4	659	13,180	$ 72,490.00	$ 72,490.00	$ 72,490.00	$ 72,490.00	
46	Section No 5	796	15,920	$ 87,560.00	$ 87,560.00	$ 87,560.00	$ 87,560.00	
47	Totals	2613	52260		$ 287,430.00	$ 287,430.00	$ 287,430.00	$ 862,290.00

Attachment B

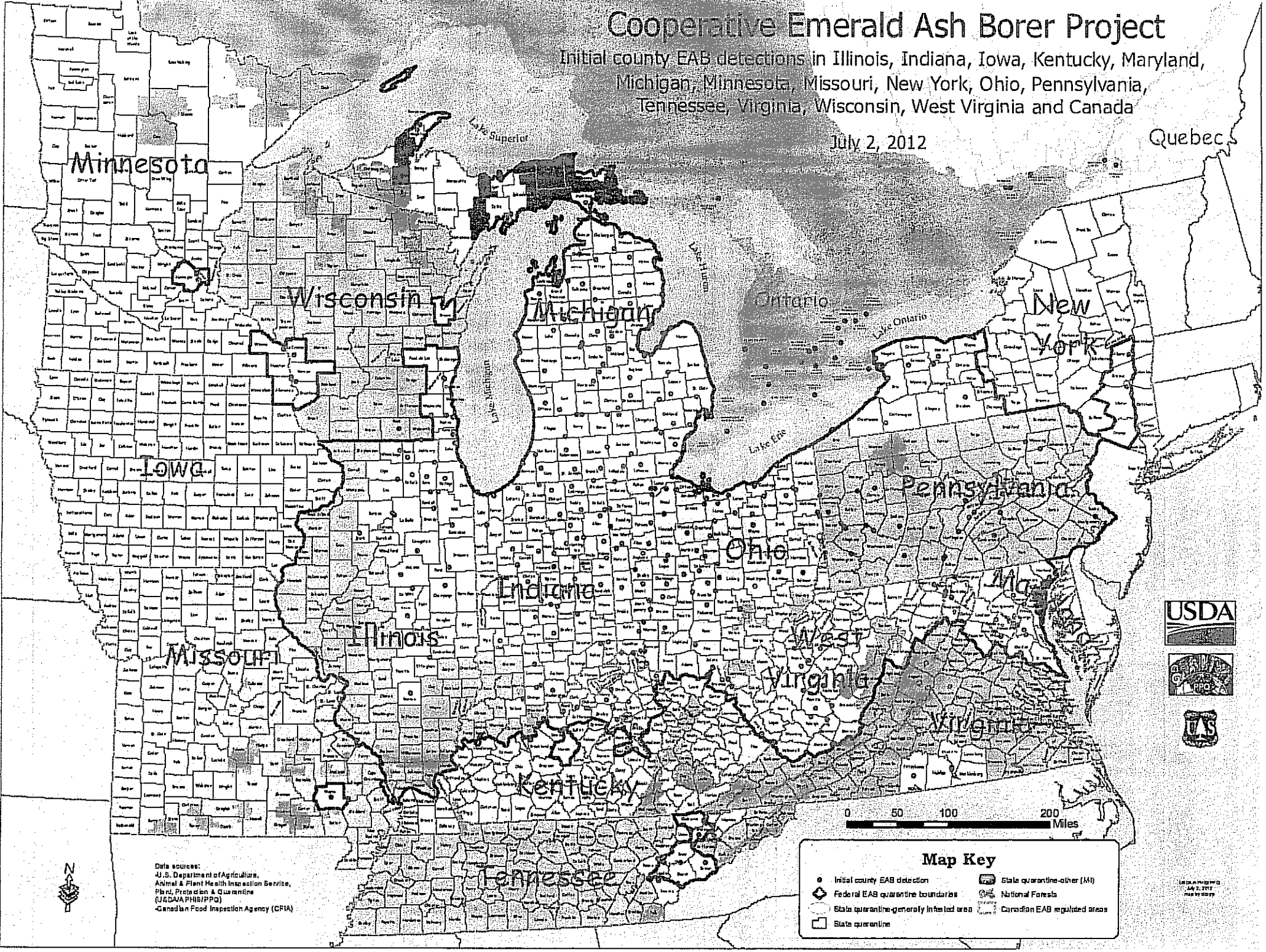
ree Trim
Sections



Cooperative Emerald Ash Borer Project

Initial county EAB detections in Illinois, Indiana, Iowa, Kentucky, Maryland, Michigan, Minnesota, Missouri, New York, Ohio, Pennsylvania, Tennessee, Virginia, Wisconsin, West Virginia and Canada

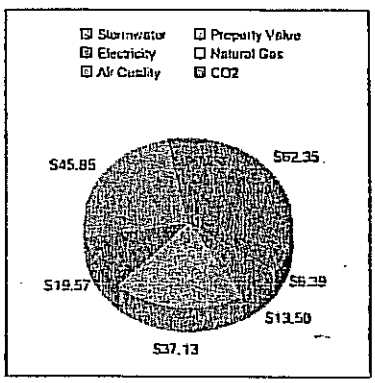
July 2, 2012



National Tree Benefit Calculator

Beta

Overall Benefits | Stormwater | Property Value | Energy | Air Quality | CO2 | About the model



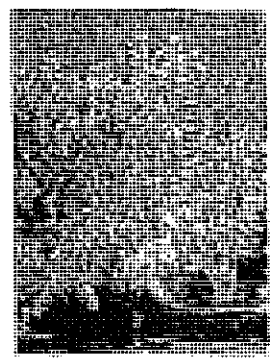
Breakdown of your tree's benefits
Click on one of the tabs above for more detail

This 20 inch Ash provides overall benefits of:
$185 every year.

While some functional benefits of trees are well documented, others are difficult to quantify (e.g., human social and communal health). Trees' specific geography, climate, and interactions with humans and infrastructure is highly variable and makes precise calculations that much more difficult. Given these complexities, the results presented here should be considered initial approximations—a general accounting of the benefits produced by urban street-side plantings.

Benefits of trees do not account for the costs associated with trees' long-term care and maintenance.

If this tree is cared for and grows to 25 inches, it will provide $219 in annual benefits.



Ash
Fraxinus species

Home Calculate another tree

National Tree Benefit Calculator

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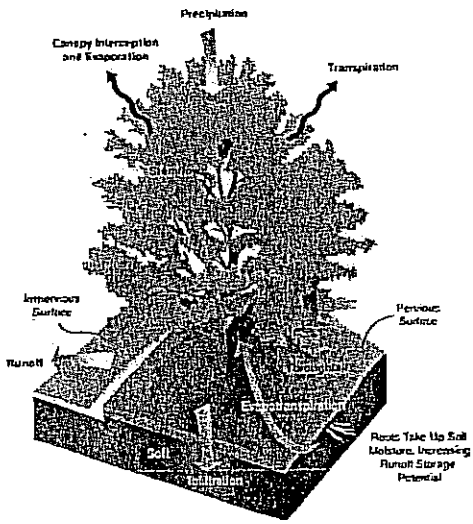
Overall Benefits | Stormwater | Property Value | Energy | Air Quality | CO2 | About the model



Your 20 inch Ash will intercept 2,301 gallons of stormwater runoff this year.

Urban stormwater runoff (or "non-point source pollution") washes chemicals (oil, gasoline, salts, etc.) and litter from surfaces such as roadways and parking lots into streams, wetlands, rivers and oceans. The more impervious the surface (e.g., concrete, asphalt, rooftops), the more quickly pollutants are washed into our community waterways. Drinking water, aquatic life and the health of our entire ecosystem can be adversely effected by this process.

Trees act as mini-reservoirs, controlling runoff at the source. Trees reduce runoff by:

- Intercepting and holding rain on leaves, branches and bark
- Increasing infiltration and storage of rainwater through the tree's root system
- Reducing soil erosion by slowing rainfall before it strikes the soil

For more information visit: The Center for Urban Forest Research

Casey Trees

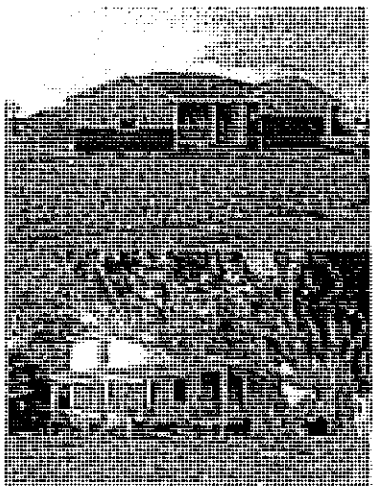
The National Tree Benefit Calculator was conceived and developed by Casey Trees and Davey Tree Expert Co.

DAVEY

National Tree Benefit Calculator

Beta

Overall Benefits | Stormwater | Property Value | Energy | Air Quality | CO2 | About the model



Located in front of a single family home, this 20 inch Ash will raise the property value by $46 this year.

Trees in front of single family homes have a greater property value benefit than those in front of multi-family homes, parks or commercial properties. Real estate agents have long known that trees can increase the "curb appeal" of properties thereby increasing sale prices. Research has verified this by showing that home buyers are willing to pay more for properties with ample versus few or no trees.

This model uses a tree's Leaf Surface Area (LSA) to determine increases in property values. That's a researcher's way of saying that a home with more trees (and more LSA) tends to have a higher value than one with fewer trees (and lower LSA). The values shown are annual and accumulate incrementally over time because each tree typically adds more leaf surface area each growing season. The amount of that increase depends on the type of tree – some add more, some less.

The 20 inch Ash you selected will add 190 square feet of LSA this year. In subsequent years it will add more, and the property value will increase accordingly.

For more information visit: The Center for Urban Forest Research

Casey Trees

The National Tree Benefit Calculator was conceived and developed by Casey Trees and Davey Tree Expert Co.

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Benefits of your tree

Home Calculate another tree

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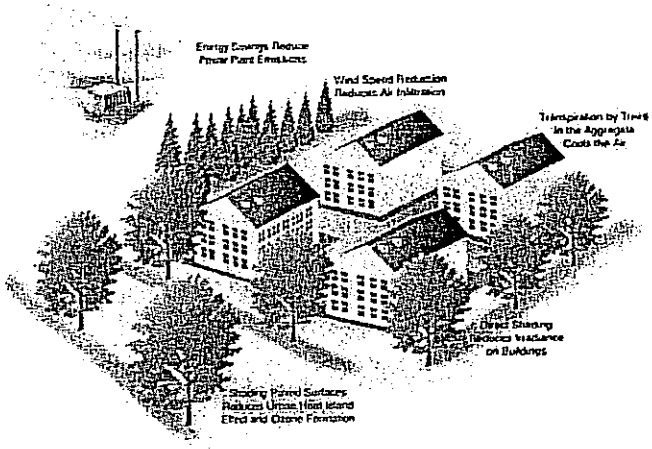
Overall Benefits | Stormwater | Property Value | Energy | Air Quality | CO2 | About the model



Your 20 inch Ash will conserve 258 Kilowatt / hours of electricity for cooling and reduce consumption of oil or natural gas by 38 therm(s).

Trees modify climate and conserve building energy use in three principal ways (see figure at left):

- Shading reduces the amount of heat absorbed and stored by buildings.
- Evapotranspiration converts liquid water to water vapor and cools the air by using solar energy that would otherwise result in heating of the air.
- Tree canopies slow down winds thereby reducing the amount of heat lost from a home, especially where conductivity is high (e.g., glass windows).

Strategically placed trees can increase home energy efficiency. In summer, trees shading east and west walls keep buildings cooler. In winter, allowing the sun to strike the southern side of a building can warm interior spaces. If southern walls are shaded by dense evergreen trees there may be a resultant increase in winter heating costs.

For more information visit The Center for Urban Forest Research

Casey Trees

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DAVEY

National Tree Benefit Calculator

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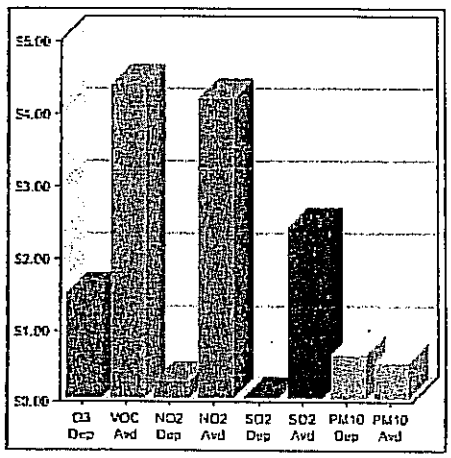
Overall Benefits | Stormwater | Property Value | Energy | Air Quality | CO2 | About the model



"Dep" stands for deposition. This is your tree absorbing or intercepting pollutants. "Avd" stands for avoided. This is your tree lessening the need for creation of these pollutants in the first place by reducing energy production needs.

Air quality benefits of your 20 inch Ash shown in the graph at left.

Air pollution is a serious health threat that causes asthma, coughing, headaches, respiratory and heart disease, and cancer. Over 150 million people live in areas where ozone levels violate federal air quality standards; more than 100 million people are impacted when dust and other particulate levels are considered "unhealthy." We now know that the urban forest can mitigate the health effects of pollution by:

- Absorbing pollutants like ozone, nitrogen dioxide and sulfur dioxide through leaves
- Intercepting particulate matter like dust, ash and smoke
- Releasing oxygen through photosynthesis
- Lowering air temperatures which reduces the production of ozone
- Reducing energy use and subsequent pollutant emissions from power plants

It should be noted that trees themselves emit biogenic volatile organic compounds (BVOCs) which can contribute to ground-level ozone production. This may negate the positive impact the tree has on ozone mitigation for some high emitting species (e.g. Willow Oak or Sweetgum). However, the sum total of the tree's environmental benefits always trumps this negative.

For more information visit The Center for Urban Forest Research

CaseyTrees

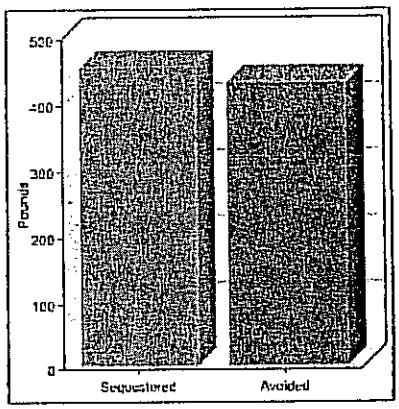
The National Tree Benefit Calculator was conceived and developed by Casey Trees and Davey Tree Expert Co.

DAVEY

National Tree Benefit Calculator

Beta

Overall Benefits | Stormwater | Property Value | Energy | Air Quality | CO2 | About the model



This year your 20 inch Ash tree will reduce atmospheric carbon by 887 pounds.

How significant is this number? Most car owners of an "average" car (mid-sized sedan) drive 12,000 miles generating about 11,000 pounds of CO2 every year. A flight from New York to Los Angeles adds 1,400 pounds of CO2 per passenger. Trees can have an impact by reducing atmospheric carbon in two primary ways (see figure at left):

- They sequester ("lock up") CO2 in their roots, trunks, stems and leaves while they grow, and in wood products after they are harvested.
- Trees near buildings can reduce heating and air conditioning demands, thereby reducing emissions associated with power production.

Combating climate change will take a worldwide, multifaceted approach, but by planting a tree in a strategic location, driving fewer miles, or replacing business trips with conference calls, it's easy to see how we can each reduce our individual carbon "footprints."

For more information visit: The Center for Urban Forest Research

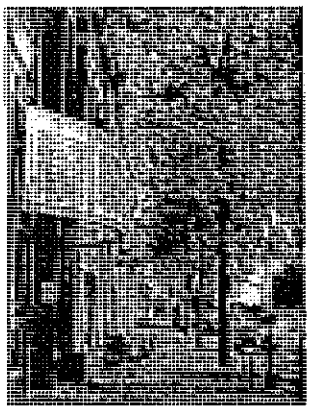
Casey Trees

The National Tree Benefit Calculator was conceived and developed by Casey Trees and Davey Tree Expert Co.

DAVEY

National Tree Benefit Calculator

Beta



The Tree Benefit Calculator allows anyone to calculate a first-order approximation of the benefits individual street-side trees provide. This tool is based on i-Tree's street tree assessment tool called STREETS. With minimal inputs of location, species and tree size, users will get an understanding of the environmental and economic value trees provide on an annual basis.

The Tree Benefit Calculator is intended to be simple and accessible. As such, this tool should be considered a starting point for understanding trees' value in the community rather than a scientific accounting of precise values. For more detailed information on urban and community forest assessments, visit the i-Tree website.

Credits:

- The National Tree Benefit Calculator was conceived and developed by Casey Trees and Davey Tree Expert Co.
- This tool is powered by i-Tree; the data generating the results comes from the i-Tree Tools CD ROM: http://www.itreetools.org/
- Significant text and graphical content was originally published by the USDA Forest Service's Center for Urban Forest Research through their Tree Guide series of publications. Credit should be given to authors of these publications.
- Facts about personal carbon production based on driving and flying courtesy of Conservation International
- For questions about this tool, contact Mike Alonzo (Casey Trees) or Scott Maco (Davey Tree Expert Co.)

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Multiple-year Protection of Ash Trees from Emerald Ash Borer with a Single Trunk Injection of Emamectin Benzoate, and Single-year Protection with an Imidacloprid Basal Drench

David R. Smitley, Joseph J. Doccola, and David L. Cox

Abstract. Green ash (*Fraxinus pennsylvanica* Marsh.) street trees ranging in size from 25 to 45 cm dbh were trunk injected with emamectin benzoate at rates of 0.10–0.60 g ai/2.54 cm dbh at three Michigan, U.S., locations in 2005 or 2006. Tree health was monitored by annual canopy thinning and dieback ratings for up to four years after a single treatment. Branch samples were collected in the autumn and the bark removed to count emerald ash borer larvae for most treatments over the same period of time. A single trunk injection treatment of emamectin benzoate at the 0.1, 0.2, or 0.4 g ai rate gave 100% control of emerald ash borer larvae in 98 of 99 treated trees for 2–3 years. Canopy ratings for treated trees remained similar for 2–4 years following trunk injection, while >50% of the control trees died during the same period of time. Ash trees that received a combination of an imidacloprid trunk injection and an imidacloprid basal drench or an annual imidacloprid basal drench had similar canopy ratings, but more larvae were found in branches from trees receiving the annual basal drench.

Key Words. *Agrilus planipennis*; Ash; Emerald Ash Borer; Emamectin Benzoate; Fraxinus; Trunk Injection.

Emerald ash borer (EAB), *Agrilus planipennis* Fairmaire (Coleoptera: Buprestidae) is native to China, Korea, Taiwan, Japan, Russia, and Mongolia (Haack et al. 2002; Bray et al. 2007). It was first discovered in North America in 2002 after urban ash trees near Detroit, Michigan, U.S., were observed to decline and die at an unprecedented rate (Cappaert et al. 2005; Smitley et al. 2008). As of March 2010, EAB has been found in 13 U.S. states (Michigan, Ohio, Indiana, Illinois, Pennsylvania, Kentucky, Wisconsin, West Virginia, Maryland, Virginia, Missouri, Minnesota, and New York), and two Canadian provinces (Ontario and Québec) (USDA 2010). Unfortunately, EAB is causing nearly 100% mortality of ash (*Fraxinus* spp.) trees in any growing environment unless they are treated with efficacious insecticides (Cappaert et al. 2005; Poland and McCullough 2006; Smitley et al. 2008). As EAB continues to spread, an increasing number of municipalities and private property owners face difficult decisions about the removal of ash trees or investment in insecticide treatment of selected trees. Trunk injections of imidacloprid or emamectin benzoate, and basal soil applications of imidacloprid were adequately efficacious against emerald ash borer when applied every year, but little information is available on more than one year of control following a single treatment (Cappaert et al. 2005; Herms et al. 2009; Smitley et al. 2010). Up until this time, very few private property owners and a small proportion of municipalities have chosen to treat ash shade trees with insecticides, most likely because they believe insecticide treatments are more expensive than tree removal, or are not reliable for saving ash trees. During the past five years, trunk injections of emamectin benzoate have dramatically changed the cost/benefit analysis for treating ash trees to protect them from EAB. Data presented in this paper detail extremely efficacious and consistent protection over multiple years from a single application. This results in a lower annual cost than previous treatments, less injury to trees, and improved environmental safety because all of the insecticide is contained within the tree, with the exception of any residue that may be found in shed leaves (Kreutzweiser et al. 2008).

MATERIALS AND METHODS

Trunk injection of emamectin benzoate was evaluated for control of EAB larvae for 2–4 years following a single treatment of green ash (*Fraxinus pennsylvanica* Marsh.) street trees at three locations: Troy, East Lansing, and Adrian, Michigan. Emamectin benzoate treatments were compared with a control (nontreated) treatment at each location, and also with a standard treatment (imidacloprid trunk injection plus imidacloprid basal soil drench) at the Adrian site. Efficacy against EAB larvae was determined by collecting branch samples each autumn and removing the bark to count larvae and new galleries. Branches were pruned from the upper one-third of the tree canopy between September 15 and November 4 each year. Three branches, at least 1.0 m long and with a diameter between 4 and 12 cm, were removed from each tree by city arborists using a bucket truck, while additional crew provided assistance from the ground. Branches in this size range were chosen because in previous surveys the greatest density of EAB larvae was found in branches with a diameter of 8–12 cm (Marshall et al. 2009). All of the trees in this study were healthy at the start of testing, dead branches were rarely encountered with the exception of the control trees. When the canopy thinning of control trees exceeded 65% in July, some branches of these trees were found to be entirely dead during branch sampling in autumn. In September and early October, dead branches were

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avoided by only sampling branches with live leaves. In late October or early November, after leaf abscission, dead branches in control trees were avoided by scraping a patch of bark before cutting a branch to make sure it was alive. In some cases when it was not possible to find three live branches, only one or two branches were sampled. If no live branches were found then the tree was excluded from branch sampling and the number of replications was reduced accordingly. The first live branch found in the upper one-third canopy with a diameter of 4–12 cm was removed, and the remaining two branches were chosen to be as far away as possible from the first branch, and from each other, to maintain canopy balance. Bark splits and emergence holes were not considered in branch sampling. Branch samples were dropped to the ground where side branches and twigs were removed.

The branches were bundled and labeled for transport to Michigan State University's Entomology Field Research Farm in East Lansing for processing. When branches were processed, a 0.65 m-long section in the center of each branch was marked for scraping. The circumference of each branch was recorded at both ends of the scraped area. Surface area of each branch sample was determined by averaging the circumference of both ends, and using the formula for the surface area of a cylinder ($L2\pi R$). EAB galleries and larvae were counted after clamping branch sections between the ends of a modified saw-horse and removing the bark with a drawknife and chisel. Branch samples were processed in a heated shed at the Entomology Field Research Farm. Annual canopy thinning and dieback ratings were made in July each year by comparing the canopy of each tree with photographs in various stages of decline from 0% (healthy) to 100% (dead) in 10% increments (Smitley et al. 2008). Each tree was rated by two or three individuals and averaged across observations to obtain an annual defoliation rating. When study trees were rated at >90% canopy thinning and dieback in July, they were excluded from branch sampling, and the trees were removed by the city during the winter.

Treatment means were compared at each test site using the general linear models procedure (PROC GLM) of SAS 9.1 (SAS 2003). Levene's test was used as part of the GLM procedure to test for homogeneity of variance. Percent data were transformed to arcsine square root (x) before analysis. Means were separated at the $P = 0.05$ level using Tukey's option in the MEANS statement. This performs a Tukey's studentized range test (HSD) when group sizes are equal and a Tukey-Kramer test when group sizes are unequal (SAS 2003).

Troy Site 2005–2006

Street trees in a neighborhood in the northern part of Troy, MI, were used for this test. These trees were between 12 and 26-years-old and ranged in size from 18–61 cm diameter at breast height (dbh). The mean dbh was 35.6 cm. Trees in this test were planted and maintained by the City of Troy. The trees were located between the street and the sidewalk, and were spaced a minimum 15 m apart and in no case did they overlap. Tree trunks were measured and marked with a metal tag during the final two weeks of April 2005. Lawns in the neighborhood were well-maintained and received natural rainfall, but very few were irrigated. Trees were grouped into 10 blocks of six trees based on location in the neighborhood. Each treatment was replicated 10 times with each replicate consisting of an individual tree. The treatments at this site consisted of five rates (0.10, 0.20, 0.40, 0.48, and 0.60 g ai/2.54 cm dbh) of emamectin benzoate formulated by Arborjet, Inc. (Woburn, MA, U.S.) and Syngenta Crop Protection, Inc. (Greensboro, NC, U.S.) as a 4.0 % ME. All trees receiving an emamectin treatment were trunk-injected on May 25, 2005 using the Arborjet Tree IV™ system. The formulated insecticide was diluted 1:1 with water and put into a bottle pressurized to 3.16 kg/cm² before being injected through four evenly spaced sites on the lower trunk of each test tree. All treated trees received a single trunk injection treatment on May 25, 2005, with the exception of trees receiving the 0.1 g ai/2.54 cm rate, which were injected again May 23, 2006, at the same rate. Control trees were not injected or treated with any insecticide. Canopy thinning and dieback ratings were made for each tree on June 27, 2005, and June 15, 2006, as previously described. Upper branches were sampled using a bucket truck in October 2005, and the bark scraped as described.

East Lansing Site, 2005–2009

Green ash street trees in East Lansing, MI, between 14 and 28-years-old with a trunk diameter between 25 and 61 cm (mean = 35.6 cm) were maintained by the City of East Lansing. Trees were located between the street and the sidewalk in seven different neighborhoods and spaced a minimum of 15 m apart to prevent canopy overlap. Tree trunks were measured and marked with a metal tag during the first week of August 2005. Study trees were located in well-maintained lawns, but very few were irrigated. Treatments were replicated 10 times with individual tree replicates. A description of each of the four treatments in this test follows, including the formulation, type of application, rate, and application date.

(1) TREE-äge (emamectin benzoate, Syngenta Crop Protection, Inc.) was applied once at 10 ml/2.54 cm dbh (0.4 g ai) on September 27, 2005. To apply using the Arborjet Tree IV system, emamectin benzoate was diluted 1:1 with water and the solution was placed into a single pressurized 3.16 kg/cm² bottle connected to four injection needles. At four evenly-spaced distances around the trunk at a height of 20–40 cm above the ground, four holes were drilled into the sapwood and a plastic septum (Arborjet #4 plug) was inserted, through which needles were placed for injection. (2) Emamectin benzoate was applied once in spring 2007 at 2.5 ml/2.54 cm (0.1 g ai) dbh. Trunk injections were made with the Arborjet QUIK-jet™ micro-injector. The number of injection sites was determined by the formula: trunk cm dbh/5.08. Undiluted emamectin benzoate was injected in equal amounts through plastic septa. A rate of 0.1 g ai/2.54 cm dbh was injected on May 21, 2007. (3) Emamectin benzoate was trunk injected in spring 2007 at 5 ml/2.54 cm dbh (0.2 g ai). Injections were made once on May 21, 2007 with the micro-injector as previously described. One tree was dropped from the test after the first year because the homeowner applied an additional insecticide treatment. (4) Control treatment, these trees were not treated.

Annually in early July, and as previously described, canopy thinning and dieback ratings were made for each tree. When branch sampling was included, the branches were pruned from the upper one-third of the tree canopy between September 19 and 26, 2006, October 8 and 12, 2007, or November 4 and 10, 2008. Branches were collected, the bark removed, and EAB larvae counted as previously described.

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Adrian Site, 2006–2009

Green ash street trees in Adrian, MI, between 14 and 28-years-old and from 15–65 cm dbh (mean dbh = 43 cm in 2008), were selected for this test. Test trees were located between the street and the sidewalk in five different neighborhoods. All of the green ash street trees in these neighborhoods were used in the study if they had at least a 15 cm dbh, appeared to be relatively healthy (less than 25% canopy thinning and dieback in September 2005), and were spaced at least 15 m apart. Tree trunks were measured and marked with a metal tag during the first week of September 2005. Study trees were located in low-maintenance lawns, and very few were irrigated. Each treatment was replicated 10 times with each replicate consisting of an individual tree. Four insecticide treatments and two control treatments were evaluated from June 2006 to July 2009. A description of each treatment follows, including the formulation, type of application, rate, and application date.

(1) Emamectin benzoate was applied once at 10 ml/2.54 cm dbh (0.4 g ai) on June 22, 2006. Trunk injections were made as previously described in the East Lansing test. (2) Emamectin benzoate, trunk injected as described in treatment (1). The only difference among these two treatments is that branch samples were collected and scraped to count larvae for treatment (1) but not for treatment (2).

Unlike the previous two studies sites, (3) Imidacloprid 75 WP, was applied as a basal drench at a rate of 1.42 g ai/2.54 cm dbh. Annual treatments consisted of the appropriate amount of imidacloprid mixed in 5.7 l of water and poured around the base of the tree within 70 cm of the trunk on June 27, 2006, May 24, 2007, and June 3, 2008. (4) Imidacloprid 5% SL, formulated by Arborjet and Bayer, was trunk-injected using the Arborjet Tree IV system at a rate of 0.2 g ai/2.54 cm trunk dbh. The formulated insecticide was diluted 1:1 with water and put into a bottle pressurized to 3.16 kg/cm^2 before being injected through four sites on the lower trunk of each test tree on June 22, 2006. In addition, trees in treatment (4) also received an imidacloprid basal drench at a rate of 1.42 g ai/2.54 cm dbh on June 6, 2007, and June 10, 2008. Trees in treatments (5) and (6) were left as untreated controls.

Canopy thinning and dieback ratings were made for each tree in early July of each year as previously described. Upper branches from trees in three treatments were collected between October 15 and 19, 2007. The bark was removed and EAB larvae counted as previously described.

RESULTS

Results from all three locations indicate a single trunk injection treatment of ash trees up to 45 cm dbh in size, made in May or June with emamectin benzoate at 0.1–0.4 g ai/2.54 cm dbh consistently gives nearly 100% control of EAB larvae even under intense pressure from EAB. Control trees declined rapidly at test sites due to EAB infestation, going from canopy thinning ratings of 19% to 54% in one year at Troy, 15% to 58% in four years at East Lansing, and from 15% to 87% in three years at Adrian, while canopy thinning ratings for ash trees that were trunk-injected with emamectin remained similar throughout the test period.

The death and removal of some trees decreased the number of replications in the third and fourth year of this study at the East Lansing and Adrian sites. Two trees at the Troy site and one tree at each of the East Lansing and Adrian sites were prematurely removed by city arborists during the winter by mistake. The average area of bark sampled per tree was 1067 cm^2, and ranged from 691 cm^2 to 3,741 cm^2, depending on the size of the tree.

Troy Site, 2005–2006

Green ash street trees in Troy were of a uniform size at the beginning of the test in June 2005 (29.2–30.5 ± 6.5 cm dbh) (Table 1). Initial tree health ratings as measured by canopy thinning were also similar, with no differences among treatments with the exception of trees receiving the highest rate of emamectin benzoate. Ash trees in that treatment started the test in June 2005 with a significantly higher level of canopy thinning (41.5 ± 26.0%) compared with control trees (19.0 ± 14.7%). This happened despite a random assignment of trees to treatments.

All rates of emamectin benzoate (0.1–0.6 g ai/2.54 cm dbh) were extremely effective when applied as a trunk injection in late May 2005. No larvae were found in any of the branch samples (30 branch sections per treatment) collected in October 2005, despite evidence of a moderate level of EAB tunneling injury from the year before (11.2 old galleries/m^2) and intense pressure from EAB in 2005 (59.2 live larvae/m^2 in control trees). Complete protection of ash trees from the trunk injections of emamectin at all tested rates in May 2005 was expressed the following summer (July 2006) in canopy thinning ratings that were as good or better than the initial ratings in June 2005 (16.7%–34.3% canopy thinning). Meanwhile, control trees declined rapidly in response to the extensive damage caused by 59.2 larvae/m^2, deteriorating to a mean rating of 59.2% canopy thinning and dieback in June 2006 (Table 1).

East Lansing Site, 2005–2009

Trees in the East Lansing site were of similar in size (28–38 ± 10 cm dbh) as those evaluated in Troy, but trunk injection treatments were initiated at an earlier stage of EAB infestation, when trees were still in excellent health based on average ratings of 7% to 17% canopy thinning (Table 2). EAB density increased four-fold in control trees from autumn 2007 to autumn 2008, going from 6.9±9.4 to 28.7±21.5 larvae/m^2, respectively. In stark contrast, no larvae were found in branch samples collected from trees that were trunk injected with emamectin benzoate three years earlier at a rate of 0.4 g ai/2.54 cm in September 2005. The same trees continued looking healthy through August 2009, when they were rated as having 13.8 ± 14.1% canopy thinning, compared to a mean rating of 58.1 ± 33.2% for control trees (Table 2). Emamectin trunk injections made in May 2007 at the 0.1 or 0.2 g ai/2.54 cm dbh rate also provided excellent protection, with no EAB larvae being found in branches collected from treated trees in October 2007 or October 2008.

Adrian Site, 2006–2009

Green ash street trees in all treatments were healthy at the beginning of the test in July 2006 (14.2%–16% canopy thinning, Table 3). Trees in the two control treatments remained healthy in 2007 (10.3%–12% canopy thinning), but declined rapidly in 2008 (58.3%–64 % canopy thinning and dieback) in response to intense pressure from EAB. Nearly all the ash trees in both control treatments were dead by July 2009 (84.6%–89.5% canopy thinning and dieback). During the same time period (2006–2009), trees that were trunk-injected with emamectin benzoate at 0.4 g ai/2.54 cm dbh in June 2006 remained healthy (Table 3). Trees

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receiving an annual basal drench of imidacloprid or a combination of imidacloprid basal drenches and an imidacloprid trunk injection also remained healthy during the test. Canopy ratings made in July 2009 and branch samples in October 2008 indicate ash trees receiving a single trunk injection of emamectin benzoate were well-protected for at least two years. Some EAB larvae were found in branch samples from one emamectin-treated tree in October 2007, but no larvae were found in any samples from emamectin treated trees in October 2008 (Table 3).

DISCUSSION

The authors of the study did not determine how important adult mortality was compared with larval mortality for trunk-injected trees in this study. However, when the bark was removed from branches in September and October live larvae in the emamectin-treated trees were not found, while dead EAB larvae were rarely found, suggesting that adult mortality, reduced egglaying, and mortality of young larvae are the most likely mechanisms of EAB control. Also, no EAB larvae were located in emamectin-treated trees, even when the trees were surrounded by heavily infested ash (28–45 EAB larvae/m^2). It is likely that under these conditions some EAB females would fly from surrounding ash to deposit eggs on the study trees, yet no larvae in the emamectin treated trees were found. This suggests emamectin is toxic to EAB larvae that tunnel into treated trees.

Trunk injections of emamectin benzoate reduced the density of EAB larvae found in treated trees by nearly 100% compared with control trees at all three sites. In the longest-running test at the East Lansing site, a single trunk injection of emamectin benzoate at the 0.4 g ai/2.54 cm dbh rate applied to ash trees with a 41 cm dbh gave 100% control of EAB larvae for three years. This suggests ash trees of this size could be adequately protected by making a trunk injection treatment at the 0.4 g ai rate once every three or four years. Our results also showed trunk injections at the 0.1 or 0.2 g ai/per 2.54 cm dbh rate gave excellent protection of 38 cm dbh trees for two years. Ash trees could be protected with trunk injections made at the 0.1g ai rate once every two years. This is half the amount of ai that would be required to treat trees once every four years at the 0.4 ai rate.

Table 1. Troy, Michigan: emerald ash borer larval density in green ash street trees and canopy thinning ratings of the same trees for 1.5 years after trunk injection of emamectin benzoate at rates of 0.10–0.60 g ai/2.54 cm dbh. Data are means ± SD. Each treatment has 10 replications unless indicated otherwise under mean ± SD as (n).

Treatment	Treatment Dates	2005 dbh (cm)	2005 Canopy thinning (%)	2005 Larvae per m^2	2006 Canopy thinning (%)
Emamectin 0.10 g/2.54 cm dbh	5-25-05 + 5-23-06	30.0 ± 3.6	16.5 ± 13.4 A	0 ± 0 A	16.7 ± 8.8
Emamectin 0.20 g/2.54 cm dbh	5-25-05	30.0 ± 3.6	25.0 ± 11.1 AB	0 ± 0 A	26.7 ± 25.0
Emamectin 0.40 g/2.54 cm dbh	5-25-05	30.5 ± 5.8	30.8 ± 22.1 AB	0 ± 0 A	28.2 ± 27.9
Emamectin 0.48 g/2.54 cm dbh	5-25-05	26.4 ± 6.4	26.8 ± 13.2 AB	0 ± 0 A	21.0 ± 14.5
Emamectin 0.60 g/2.54 cm dbh	5-25-05	30.4 ± 6.5	41.5 ± 26.0 B	0 ± 0 A	34.3 ± 40.2 (9)
Control	-	29.6 ± 4.8	19.0 ± 14.7 A	59.2 ± 72.0 B	54.3 ± 33.9 (9)

Means followed by the same letter are not significantly different at $P = 0.05$, by the Tukey-Kramer test.

Table 2. East Lansing, Michigan: emerald ash borer larval density in green ash street trees and canopy thinning ratings of the same trees for one to three years after a single trunk injection of emamectin benzoate at a rate of 0.4 g ai/ inch dbh on September 27, 2005, or at 0.2 or 0.1 ai/2.54 cm dbh on May 21, 2007. Data are means ± SD. Each treatment has 10 replications unless indicated otherwise under the mean ± SD by (n).

Treatment	Treatment Dates	2006 dbh (cm)	2006 canopy Thinning (%)	2007 canopy thinning	2007 Larvae per m^2	2008 canopy Thinning (%)	2008 larvae per m^2	2009 canopy thinning (%)
Emamectin trunk injection 0.4 g ai/inch dbh	Sept. 2005	29.9 ± 11.4	7.3 ± 8.9	12.8 ± 14.8	0 ± 0 A	19.3 ± 17.9A	0 ± 0 A	13.8 ± 14 A
Emamectin trunk injection 0.2 g ai/inch dbh	May 2007	29.2 ± 4.1	11.8 ± 1.6	17.3 ± 13.5 (9)	0 ± 0 A (9)	12.8 ± 8.8 A (9)	0 ± 0 A (9)	13.1 ± 13.3 A (9)
Emamectin trunk injection 0.1 g ai/inch dbh	May 2007	38.2 ± 7.3	17.0 ± 10.5	11.4 ± 15.9	0 ± 0 A	29.8 ± 29.4 A	0 ± 0 A (6)	10.4 ± 9.1 A (7)
Control	-	28.7 ± 10.6	16.0 ± 21.0	28.5 ± 27.9	6.9 ± 9.4 B	51.3 ± 30.2 B	28.7 ± 21.5 B	58.1 ± 33.2 B

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Table 3. Adrian, Michigan: emerald ash borer larval density in green ash street trees and canopy thinning ratings of the same trees for 3–4 years after a single trunk injection of emamectin benzoate on June 22, 2006. Data are means ± SD. Each treatment has 10 replications unless shown under the mean ± SD as (n).

Treatment	Treatment dates	2006 dbh (cm)	2006 canopy thinning (%)	2007 canopy thinning (%)	2007 larvae per m²	2008 canopy thinning (%)	2008 larvae per m²	2009 canopy thinning (%)
Emamectin trunk injection 0.4 g ai/inch dbh	June 2006	45.0 ± 8.1 A[z]	14.4 ± 3.1 A	11.1 ± 6.0 A	-	12.3 ± 10.4 A	-	7.2 ± 6.7 A
Emamectin trunk injection 0.4 g ai/inch dbh	June 2006	43.1 ± 12.2A	16.0 ± 5.0 A	11.6 ± 6.5 A	2.4 ± 7.1 A	13.0 ± 12.7 A (9)	0 ± 0 A (9)	20.0 ± 8.0 A
Imidacloprid trunk injection + soil imidacloprid	June 2007 + June 2007, 2008	38.4 ± 9.8 A	14.9 ± 3.6 A	12.0 ± 4.9 A	-	13.5 ± 12.0 A	-	23.9 ± 10.1 A
Soil imidacloprid	June 2006, 2007, 2008	39.6 ± 15.0 A	14.2 ± 5.7 A	8.4 ± 4.0 A	3.6 ± 6.8 A	33.0 ± 25.8 AB	5.7 ± 5.6 AB (4)	30.3 ± 22.0 A
Control 1	-	43.4 ± 16.9 A	-	12.0 ± 15.1 A	-	58.3 ± 26.5 BC	23.6 ± 39.4 B (8)	89.5 ± 13.4 B
Control 2	-	44.7 ± 11.2 A	15.6 ± 5.4 A	10.3 ± 7.0 A	6.2 ± 6.6 A	64.0 ± 29.3 C	27.7 ± 28.9 B (7)	84.6 ± 12.0 B

[z] Means followed by the same letter are not significantly different at $P = 0.05$, by the Tukey-Kramer test.

Ash trees receiving an annual basal drench of imidacloprid or a combination of an imidacloprid basal drench and an imidacloprid trunk injection also appeared healthy as determined by canopy thinning ratings at the end of the Adrian test, but significantly more EAB larvae (5.7 per m²) were found in imidacloprid-treated trees compared with emamectin benzoate-treated trees (0.0 per m²).

Protection of ash trees for 2–4 years following a single insecticide treatment completely changes the prognosis for ash street trees and shade trees in North America after invasion of emerald ash borer. Up until this time, insecticide treatment was reserved for only the most valuable trees because of the high cost of making frequent trunk injections. The multiple-year protection documented in this study reduces the projected cost of saving ash trees by at least 50%, bringing treatments well within the range of many homeowners and some cities or other municipalities. For example, one can compare the cost of hiring an arborist to treat a 31.4 cm dbh ash tree with annual trunk injections of IMA-jet (imidacloprid) at the 8 ml/2.54 cm dbh rate, to the cost of hiring the same arborist to treat every other year or every fourth year with TREE-äge (emamectin benzoate) at the 0.4 g ai/2.54 cm dbh rate. At the time of this writing the cost of the imidacloprid insecticide to the arborist is USD $23.92 per year, the cost of the emamectin benzoate insecticide is $26.13 per year when treating every third year, and $17.42 when treating every fourth year. Labor costs vary depending on the arborist, the number and size of trees being treated, and the location of the property. If one adds a labor charge of $50.00 per treatment-visit for the 31.4 cm dbh tree, then the total average cost per year over a three-year period would be $73.92/year for annual imidacloprid trunk injections, $51.13/year for emamectin benzoate injections made every third year, and $34.09/year for emamectin benzoate injections made every fourth year. This brings the cost of trunk injections into a much more practical range for homeowners, especially when weighed against the cost of tree removal which may be more than $1,500 for a large tree (62.8 cm dbh).

Data from Troy, East Lansing, and Adrian, MI, indicate most of the ash trees in cities along the leading edge of the contiguous EAB invasion front will perish within five years of when the first trees are found to die from EAB. This was certainly true for Troy, MI, and much of the Detroit Metropolitan area where the first ash trees began to die in 2004. By 2009 all of the ash trees were dead except ones that were protected with insecticide treatments or where young trees have sprouted from the stumps of dead ones. Sprouting ash trees and the germination of ash seed will guarantee the survival of EAB, but populations will be much smaller after the initial five to eight-year period when unprotected ash trees perish. This means the remaining ash trees will be easier to protect with insecticides.

Acknowledgments. We appreciate the assistance of Terrance Davis for supervising the field research, and the Cities of Troy, East Lansing, and Adrian, for assisting with branch sampling. This research was partially supported by Arborjet, Inc., Syngenta Crop Science, and the Michigan Agricultural Experiment Station.

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David R. Smitley (corresponding author)
Department of Entomology
Michigan State University
East Lansing, MI 48824, U.S.
smitley@msu.edu

Joseph J. Doccola
Arborjet, Inc.
99 Blueberry Hill Road
Woburn, MA 01801, U.S.
joedoccola@arborjet.com

David L. Cox
Syngenta Crop Protection, Inc.
14446 Huntington Rd
Madera, CA 93636, U.S.
david.cox@syngenta.com

Résumé. Des frênes de Pennsylvanie (*Fraxinus pennsylvanica* Marsh.) de rue de 25 à 45 cm de DHP ont été injectés au tronc avec du benzoate d'emamectine à des taux de 0,1 à 0,6 g d'ingrédient actif par 2,54 cm de DHP, et ce au Michigan en 2005 ou 2006. La condition de santé des arbres a été suivie en regard des taux de densité de la cime et de dépérissement jusqu'à quatre ans après un traitement unique. Des échantillons de branches ont été récoltées en automne et l'écorce enlevée pour faire un décompte des larves d'agrile du frêne pour la plupart des traitements durant la même période. Une injection unique dans le tronc de benzoate d'emamectine à des taux de 0,1 ou 0,4 g d'ingrédient actif a produit un contrôle à 100% des larves d'agrile du frêne sur 98 des 99 arbres traités durant une période de 2 à 3 ans. Les cimes sont demeurées similaires chez les arbres traités durant une période de 2 à 4 ans après l'injection dans le tronc tandis que plus de 50% des arbres témoins moururent au cours de la même période. Les frênes qui ont reçu une combinaison d'imidaclopride par injection dans le tronc et par injection dans le sol ou par injection annuelle dans le sol avaient des cimes similaires, mais plus de larves ont été découvertes dans les branches des arbres qui recevaient des injections annuelles dans le sol.

Zusammenfassung. Grüne Eschen als Straßenbäume in der Größe von 25–45 cm Stammdurchmesser wurden im Stamm mit Emamectin Benzoat in Raten von 0,10–0,60 g ai/2,54 cm Stammdurchmesser an drei verschiedenen Standorten in Michigan, U.S. injiziert. Die Baumgesundheit wurde überwacht durch jährliches Ausdünnen der Krone und Bewertung der Totholzbildung für bis zu 4 Jahren nach einer Behandlung. Im Herbst wurden Astproben gesammelt und bei den meisten Behandlungen auch die Rinde entfernt, um die Larven des Eschenbohrers im gleichen Zeitraum zu zählen. Eine einzelne Stamminjektion mit Emamectin Benzoat mit Raten von 0,1, 0,2 und 0,4 g ai ergab eine 100% Kontrolle der Larven in 98 von 99 behandelten Bäumen in 2–3 Jahren. Die Kronenbewertung bei behandelten Bäumen blieb über für 2–4 Jahre nach der Behandlung gleich, während >50% der kontrollierten Bäume im gleichen Zeitraum abstarben. Eschen, die eine Kombination aus Imidacloprid-Stamm-Injektion und Imidacloprid-Wurzelaufguss oder einen jährlichen Imidacloprid-Wurzelaufguss erhielten, hatten ähnliche Kronenbilder, aber es wurden mehr Larven in Ästen von Bäumen gefunden, die einen jährlichen Imidacloprid-Wurzelaufguss erhielten.

Resumen. Árboles de fresno (*Fraxinus pennsylvanica* Marsh.) de tamaños de 25 a 45 cm de DAP fueron inyectados al tronco con benzoato de emamectin a tasas de 0.10 – 0.60 g/2.54 cm de DAP en tres localidades de Michigan en 2005 y 2006. Fue monitoreada la salud de los árboles por muerte descendente y aclareos de copa anuales por cuatro años después del tratamiento. Se colectaron muestras de ramas en el otoño y la corteza removida para contar las larvas del barrenador esmeralda del fresno para los tratamientos en el mismo periodo. Un solo tratamiento de inyección al tronco de benzoato de emamectin a una tasa de 0.1, 0.2 o 0.4 g dio 100% de control de larvas del barrenador esmeralda del fresno en 98 de 99 árboles tratados para 2-3 años. Los estados de las copas para los árboles tratados permanecieron similares para 2-4 años después de la inyección, mientras que >50% de los árboles tratados murió durante el mismo periodo de tiempo. Los fresnos que recibieron una combinación de una inyección al tronco de imidacloprid y una zanja basal de imidacloprid o un tratamiento anual de zanja con imidacloprid tuvo estados de copa similares, pero se encontraron más larvas en ramas de árboles que recibieron zanjas anuales.

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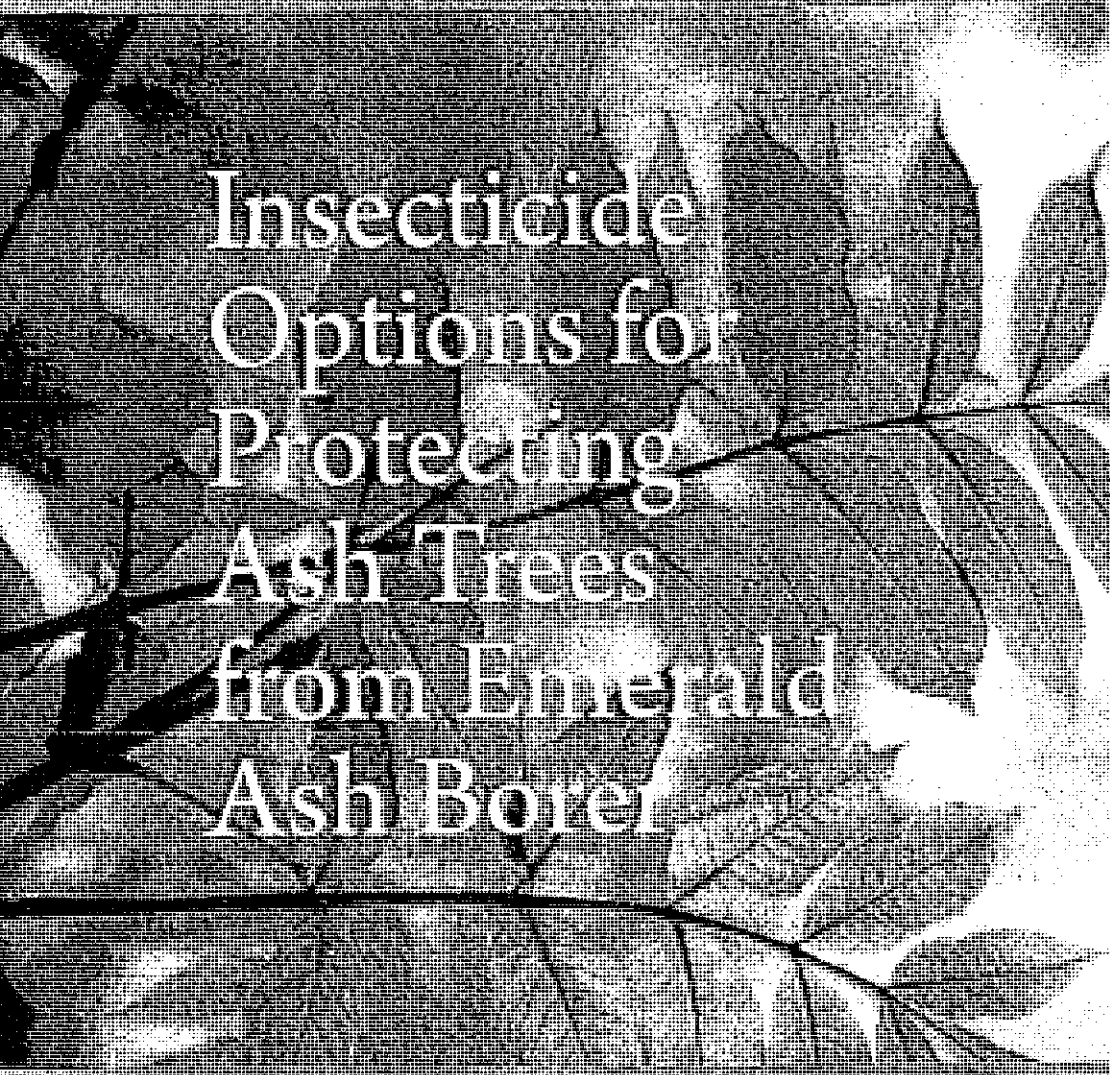
Attachment E



Insecticide Options for Protecting Ash Trees from Emerald Ash Borer

Daniel A. Herms
Deborah G. McCullough
David R. Smitley
Clifford S. Sadof
R. Chris Williamson
Philip L. Nixon

North Central IPM Center

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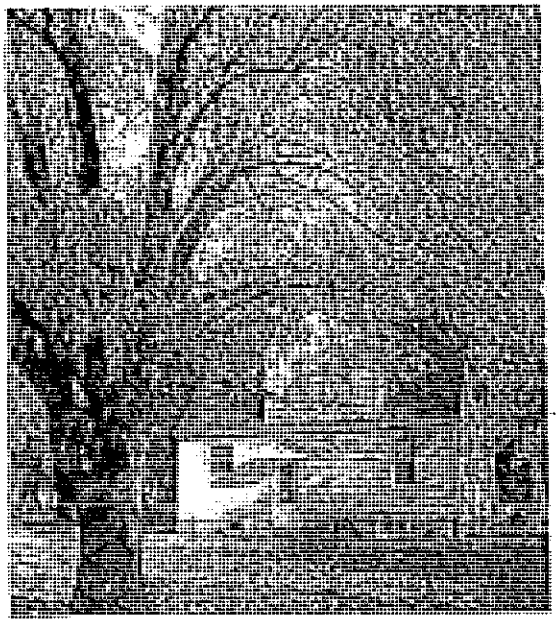


Daniel A. Herms[1], Deborah G. McCullough[2], David R. Smitley[3], Clifford S. Sadof[4], R. Chris Williamson[5], and Philip L. Nixon[6]

[1]Professor, Department of Entomology, Ohio Agricultural Research and Development Center, The Ohio State University, Wooster, OH 44691

[2]Professor, Department of Entomology and Department of Forestry, Michigan State University, East Lansing, MI 48824

[3]Professor, Department of Entomology, Michigan State University, East Lansing, MI 48824

[4]Professor, Department of Entomology, Purdue University, West Lafayette, IN 47907

[5]Associate Professor, University of Wisconsin-Madison and University of Wisconsin Cooperative Extension, Madison, WI 53706

[6]Extension Entomologist, Department of Natural Resources and Environmental Sciences, University of Illinois at Urbana-Champaign, Urbana, IL 61801

Contents

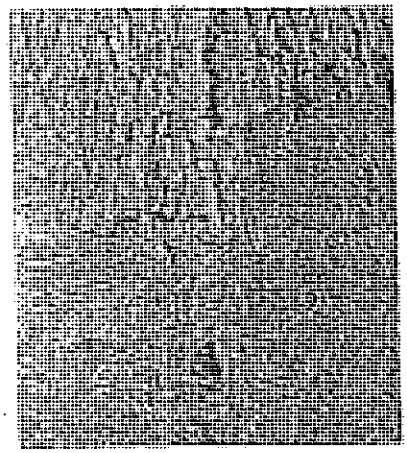
Insecticide Options for Protecting Ash Trees from Emerald Ash Borer

Emerald ash borer (*Agrilus planipennis* Fairmaire), an invasive insect native to Asia, has killed tens of millions of ash trees in urban, rural and forested settings. This beetle was first discovered in 2002 in southeast Michigan and Windsor, Ontario. As of June 2009, emerald ash borer (EAB) infestations were known to be present in 12 states and two Canadian provinces. Many homeowners, arborists and tree care professionals want to protect valuable ash trees from EAB. Scientists have learned much about this insect and methods to protect ash trees since 2002. This bulletin is designed to answer frequently asked questions and provide the most current information on insecticide options for controlling EAB.

Answers to Frequently Asked Questions

What options do I have for treating my ash trees?

If you elect to treat your ash trees, there are several insecticide options available and research has shown that treatments can be effective. Keep in mind, however, that controlling insects that feed under the bark with insecticides has always been difficult. This is especially true with EAB because our native North American ash trees have little natural resistance to this pest. In university trials, some insecticide treatments were effective in some sites, but the same treatments failed in other sites. Furthermore, in some studies conducted over multiple years, EAB densities continued to increase in individual trees despite annual treatment. Some arborists have combined treatments to increase the odds of success (e.g., combining a cover spray with a systemic treatment).



Our understanding of how EAB can be managed successfully with insecticides has increased substantially in recent years. The current state of this understanding is detailed in the bulletin. It is important to note that research on management of EAB remains a work in progress. Scientists from universities, government agencies and companies continue to conduct intensive studies to understand how and when insecticide treatments will be most effective.

I know my tree is already infested with EAB. Will insecticides still be effective?

If a tree has lost more than 50 percent of its canopy, it is probably too late to save the tree. Studies have shown that it is best to begin using insecticides while ash trees are still relatively healthy. This is because most of the insecticides used for EAB control act systemically — the insecticide must be transported within the tree. In other words, a tree must be healthy enough to carry a systemic

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insecticide up the trunk and into the branches and canopy. When EAB larvae feed, their galleries injure the phloem and xylem that make up the plant's circulatory system. This interferes with the ability of the tree to transport nutrients and water, as well as insecticides. As a tree becomes more and more infested, the injury becomes more severe. Large branches or even the trunk can be girdled by the larval galleries.

Studies have also shown that if the canopy of a tree is already declining when insecticide treatments are initiated, the condition of the tree may continue to deteriorate during the first year of treatment. In many cases, the tree canopy will begin to improve in the second year of treatment. This lag in the reversal of canopy decline probably reflects the time needed for the tree to repair its vascular system after the EAB infestation has been reduced.

My ash tree looks fine but my county is quarantined for EAB. Should I start treating my tree?

Scientists have learned that ash trees with low densities of EAB often have few or no external symptoms of infestation. Therefore, if your property is within a county that has been quarantined for EAB, your ash trees are probably at risk. Similarly, if your trees are outside a quarantined county but are still within 10-15 miles of a known EAB infestation, they may be at risk. If your ash trees are more than 15 miles beyond this range, it is probably too early to begin insecticide treatments. Treatment programs that begin too early are a waste of money. Remember, however, that new EAB infestations have been discovered every year since 2002 and existing EAB populations will build and spread over time. Stay up to date with current EAB quarantine maps and related information at www.emeraldashborer.info. You can use the links in this Web site to access specific information for individual states. When an EAB infestation is detected in a state or county for the first time, it will be added to these maps. Note, however, that once an area has been quarantined, EAB surveys generally stop, and further spread of EAB in that area will not be reflected on future maps.

I realize that I will have to protect my ash trees from EAB for several years. Is it worth it?

The economics of treating ash trees with insecticides for EAB protection are complicated. Factors that can be considered include the cost of the insecticide and expense of application, the size of the trees, the likelihood of success, and potential costs of removing and replacing the trees. Until recently, insecticide products had to be applied every year. A new product that is effective for two years or even longer (emamectin benzoate) has altered the economics of treating ash trees. As research progresses, costs and methods of treating trees will continue to change and it will be important to stay up to date on treatment options.

Benefits of treating trees can be more difficult to quantify than costs. Landscape trees typically increase property values, provide shade and cooling, and contribute to the quality of life in a neighborhood. Many people are sentimental about their trees. These intangible qualities are important and should be part of any decision to invest in an EAB management program.

It is also worth noting that the size of EAB populations in a specific area will change over time. Populations initially build very slowly, but later increase rapidly as more trees become infested. As EAB populations reach their peak, many trees will decline and die within one or two years. As untreated ash trees in the area succumb, however, the local EAB population will decrease substantially. Scientists do not yet have enough experience with EAB to know what will happen over time to trees that survive the initial wave of EAB. Ash seedlings and saplings are common in forests, woodlots, and right-of-ways, however, and it is unlikely that EAB will ever completely disappear from an area. That means that ash trees may always be at some risk of being attacked by EAB, but it seems reasonable to expect that treatment costs could eventually decrease as pest pressure declines after the EAB wave has passed.

Insecticide Options for Controlling EAB

Insecticides that can effectively control EAB fall into four categories: (1) systemic insecticides that are applied as soil injections or drenches; (2) systemic insecticides applied as trunk injections; (3) systemic insecticides applied as lower trunk sprays; and (4) protective cover sprays that are applied to the trunk, main branches, and (depending on the label) foliage.

Insecticide formulations and application methods that have been evaluated for control of EAB are listed in Table 1. Some are marketed for use by homeowners while others are intended for use only by professional applicators. The "active ingredient" refers to the compound in the product that is actually toxic to the insect.

Formulations included in Table 1 have been evaluated in multiple field trials conducted by the authors. Inclusion of a product in Table 1 does not imply that it is endorsed by the

Table 1. Insecticide options for professionals and homeowners for controlling EAB that have been tested in multiple university trials. Some products may not be labeled for use in all states. Some of the listed products failed to protect ash trees when they were applied at labeled rates. Inclusion of a product in this table does not imply that it is endorsed by the authors or has been consistently effective for EAB control. See text for details regarding effectiveness.

Insecticide Formulation	Active Ingredient	Application Method	Recommended Timing
Professional Use Products			
Merit® (75WP, 75WSP, 2F)	Imidacloprid	Soil injection or drench	Mid-fall and/or mid- to late spring
Xytect™ (2F, 75WSP)	Imidacloprid	Soil injection or drench	Mid-fall and/or mid- to late spring
IMA-jet®	Imidacloprid	Trunk injection	Early May to mid-June
Imicide®	Imidacloprid	Trunk injection	Early May to mid-June
TREE-age™	Emamectin benzoate	Trunk injection	Early May to mid-June
Inject-A-Cide B®	Bidrin®	Trunk injection	Early May to mid-June
Safari™ (20 SG)	Dinotefuran	Systemic bark spray	Early May to mid-June
Astro®	Permethrin	Preventive bark and foliage cover sprays	2 applications at 4-week intervals; first spray should occur when black locust is blooming (early May in southern Ohio to early June in mid-Michigan)
Onyx™	Bifenthrin		
Tempo®	Cyfluthrin		
Sevin® SL	Carbaryl		
Homeowner Formulation			
Bayer Advanced™ Tree & Shrub Insect Control	Imidacloprid	Soil drench	Mid-fall or mid- to late spring

authors or has been consistently effective for EAB control. Please see the following sections for specific information about results from these trials. Results of some tests have also been posted on www.emeraldashborer.info.

Strategies for the most effective use of these insecticide products are described below. It is important to note that pesticide labels and registrations change constantly and vary from state to state. It is the legal responsibility of the pesticide applicator to read, understand and follow all current label directions for the specific pesticide product being used.

Using Insecticides to Control EAB

Soil-Applied Systemic Insecticides

Systemic insecticides applied to the soil are taken up by the roots and translocated throughout the tree. The most widely tested soil-applied systemic insecticide for control of EAB is imidacloprid, which is available under several brand names for use by professional applicators and homeowners (see Table 1). All imidacloprid formulations can be applied as a drench by mixing the product with water, then pouring the solution directly on the soil around the base of the trunk. Dinotefuran was recently labeled for use against EAB as a soil treatment (in addition to its use as a basal trunk spray discussed below). Studies to test its effectiveness as a soil treatment are currently underway in Michigan and Ohio.

Imidacloprid soil applications should be made when the soil is moist but not saturated. Application to water-logged soil can result in poor uptake if the insecticide becomes excessively diluted and can also result in puddles of insecticide that could wash away, potentially contaminating surface waters and storm sewers. Insecticide uptake will also be limited when soil is excessively dry. Irrigating the soil surrounding the base of the tree before the insecticide application can improve uptake.

The application rates for the homeowner product (Bayer Advanced™ Tree & Shrub Insect Control) and professional formulations of imidacloprid are very similar. Homeowners apply the same amount of active ingredient that professionals apply. However, there are certain restrictions on the use of homeowner formulations that do not apply to professional formulations. Homeowner formulations of imidacloprid can be applied only as a drench. It is not legal to inject these products into the soil, although some companies have marketed devices to homeowners specifically for this purpose. Homeowners are also restricted to making only one application per year. Several generic products containing imidacloprid are available to homeowners, but the formulations vary and the effectiveness of these products has not yet been evaluated in university tests.

Soil drenches offer the advantage of requiring no special equipment for application other than a bucket or watering can. However, imidacloprid can bind to surface layers of organic matter, such as mulch or leaf litter, which can reduce uptake by the tree. Before applying soil drenches, it is important to remove, rake or pull away any mulch or dead leaves so the insecticide solution is poured directly on the mineral soil.

Imidacloprid formulations labeled for use by professionals can be applied as a soil drench or as soil injections. Soil injections require specialized equipment, but offer the advantage of placing the insecticide under mulch or turf and directly into the root zone. This also can help to prevent runoff on sloped surfaces. Injections should be made just deep enough to place the insecticide beneath the soil surface (2-4 inches). Soil injections should be made within 18 inches of the trunk where the density of fine roots is highest. As you move away from the tree, large radial roots diverge like spokes on a wheel and studies have shown that uptake is higher when the product is applied at the base of the trunk. There are no studies that show that applying fertilizer with imidacloprid enhances uptake or effectiveness of the insecticide.

Optimal timing for imidacloprid soil injections and drenches is mid-April to mid-May, depending on your region. Allow four to six weeks for uptake and distribution of the insecticide within the tree. In southern Ohio, for example, you would apply the product by

mid-April; in southern Michigan, you should apply the product by early to mid-May. When treating larger trees (e.g., with trunks larger than 12 inches in diameter), treat on the earlier side of the recommended timing. Large trees will require more time for uptake and transportation of the insecticide than will small trees. Recent tests show that imidacloprid soil treatments can also be successful when applied in the fall.

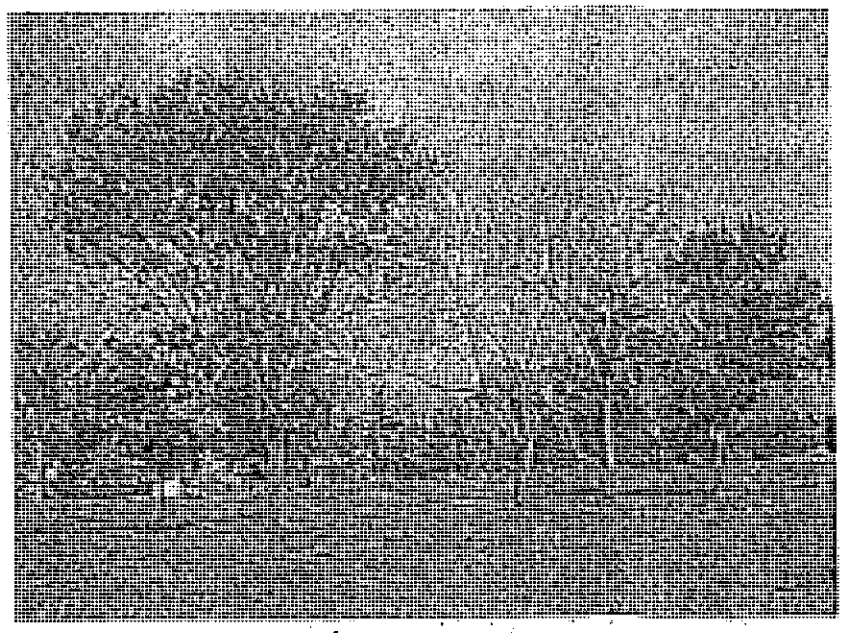
Trunk-Injected Systemic Insecticides

Several systemic insecticide products can be injected directly into the trunk of the tree including formulations of imidacloprid and emamectin benzoate (see Table 1). An advantage of trunk injections is that they can be used on sites where soil treatments may not be practical or effective, including trees growing on excessively wet, compacted or restricted soil environments. However, trunk injections do wound the trunk, which may cause long-term damage, especially if treatments are applied annually.

Products applied as trunk injections are typically absorbed and transported within the tree more quickly than soil applications. Allow three to four weeks for most trunk-injected products to move through the tree. Optimal timing of trunk injections occurs after trees have leafed out in spring but before EAB eggs have hatched, or generally between mid-May and mid-June. Uptake of trunk-injected insecticides will be most efficient when trees are actively transpiring. Best results are usually obtained by injecting trees in the morning when soil is moist but not saturated. Uptake will be slowed by hot afternoon temperatures and dry soil conditions.

Noninvasive, Systemic Basal Trunk Sprays

Dinotefuran is labeled for application as a noninvasive, systemic bark spray for EAB control. It belongs to the same chemical class as imidacloprid (neonicotinoids) but is much more soluble. The formulated insecticide is sprayed on the lower five to six feet of the trunk using a common garden sprayer and low pressure. Research has shown that the insecticide penetrates the bark and moves systemically throughout the rest of the tree.



Healthy ash trees that have been protected with insecticides growing next to untreated ash trees killed by EAB.

Dinotefuran can be mixed with surfactants that may facilitate its movement into the tree, particularly on large trees with thick bark. However, in field trials, adding a surfactant did not consistently increase the amount of insecticide recovered from the leaves of treated trees.

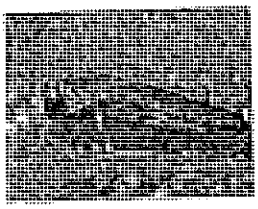
The basal trunk spray offers the advantage of being quick and easy to apply and requires no special equipment other than a garden sprayer. This application technique does not wound the tree, and when applied correctly, the insecticide does not enter the soil.

Protective Cover Sprays

Insecticides can be sprayed on the trunk, branches and (depending on the label) foliage to kill adult EAB beetles as they feed on ash leaves, and newly hatched larvae as they chew through the bark. Thorough coverage is essential for best results. Products that have been evaluated as cover sprays for control of EAB include some specific formulations of permethrin, bifenthrin, cyfluthrin and carbaryl (see Table 1).

Protective cover sprays are designed to prevent EAB from entering the tree and will have no effect on larvae feeding under the bark. Cover sprays should be timed to occur when most adult beetles are feeding and beginning to lay eggs. Adult activity can be difficult to monitor because there are no

effective pheromone traps for EAB. However, first emergence of EAB adults generally occurs between 450-550 degree days (starting date of January 1, base temperature of 50°F), which corresponds closely with full bloom of black locust (*Robinia pseudoacacia*). For best results, consider two applications, one at 500 DD_{50} (as black locust approaches full bloom) and a second spray four weeks later.



EAB adults must feed on foliage before they become reproductively mature.

How Effective Are Insecticides for Control of EAB?

Extensive testing of insecticides for control of EAB has been conducted by researchers at Michigan State University (MSU) and The Ohio State University (OSU). Results of some of the MSU trials are available at www.emeraldashborer.info.

Soil-Applied Systemic Insecticides

Efficacy of imidacloprid soil injections for controlling EAB has been inconsistent; in some trials EAB control was excellent, while others yielded poor results. Differences in application protocols and conditions of the trials have varied considerably, making it difficult to reach firm conclusions about sources of variation in efficacy. For example, an MSU study found that low-volume soil injections of imidacloprid applied to small trees averaging 4 inches in DBH (diameter of the trunk at breast height) using the Kioritz applicator (a hand-held device for making low-volume injections) provided good control at one site. However, control was poor at another site where the same application protocols were used to treat larger trees (13-inch DBH). Imidacloprid levels may have been too low in the larger trees to provide adequate control. Higher pest pressure at the second site also may have contributed to poor control in the large trees.

In the same trials, high-pressure soil injections of imidacloprid (applied in two concentric rings, with one at the base of the tree and the other halfway to the drip line of the canopy) provided excellent control at one site. At another site, however, soil injections applied using the same rate, timing and application method were completely ineffective, even though tree size and infestation pressure were very similar. It should be noted that recent studies have shown that imidacloprid soil injections made at the base of the trunk result in more effective uptake than applications made on grid or circular patterns under the canopy.

Imidacloprid soil drenches have also generated mixed results. In some studies conducted by MSU and OSU researchers, imidacloprid soil drenches have provided excellent control of EAB. However, in other studies, control has been inconsistent. Experience and research indicate that imidacloprid soil drenches are most effective on smaller trees and control of EAB on trees with a DBH that exceeds 15 inches is less consistent.

This inconsistency may be due to the fact that application rates for systemic insecticides are based on amount of product per inch of trunk diameter or circumference. As the DBH of a tree increases, the amount of vascular tissue, leaf area and biomass that must be protected by the insecticide increases exponentially. Consequently, for a particular application rate, the amount of insecticide applied as a function of tree size is proportionally decreased as trunk diameter increases. Hence, the DBH-based application rates that effectively protect relatively small trees can be too low to effectively protect large-trees. Some systemic insecticide products address this issue by increasing the application rate for large trees.

In an OSU study with larger trees (15- to 22-inch DBH), Xytect™ (imidacloprid) soil drenches provided consistent control of EAB when applied experimentally at twice the rate that was allowed at that time. Recently, the Xytect™ label was modified to allow the use of this higher rate, which we now recommend when treating trees larger than 15-inch DBH. Merit® imidacloprid formulations, however, are not labeled for application at this high rate. Therefore, when treating trees greater than 15-inch DBH with Merit® soil treatments, two applications are recommended, either in the fall and again in the spring, or twice in the spring, about four weeks apart (for example in late April and again in late May). This is not an option for Bayer Advanced™ Tree and Shrub Insect Control and other

homeowner formulations of imidacloprid, which are limited by the label to one application per year. Homeowners wishing to protect trees larger than 15-inch DBH should consider having their trees professionally treated.

Treatment programs must comply with any limits specified on the label regarding the maximum amount of insecticide that can be applied per acre during a given year.

Trunk-Injected Systemic Insecticides

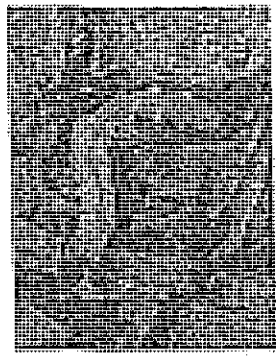
Emamectin benzoate • In several intensive studies conducted by MSU and OSU researchers, a single injection of emamectin benzoate in mid-May or early June provided excellent control of EAB for at least two years, even under high pest pressure. For example, in a highly-replicated study conducted on trees ranging in size from 5- to 20-inch DBH at three sites in Michigan, untreated trees had an average of 68 to 132 EAB larvae per m^2 of bark surface, which represents high pest pressure. In contrast, trees treated with emamectin benzoate had, on average, only 0.2 larvae per m^2, a reduction of > 99 percent. When additional trees were felled and debarked two years after the emamectin benzoate injection, there were still virtually no larvae in the treated trees, while adjacent, untreated trees at the same sites had hundreds of larvae.

In two OSU studies conducted in Toledo with street trees ranging in size from 15- to 25-inch DBH, a single application of emamectin benzoate also provided excellent control for two years. There was no sign of canopy decline in treated trees and very few emergence holes, while the canopies of adjacent, untreated trees exhibited severe decline and extremely high numbers of emergence holes.

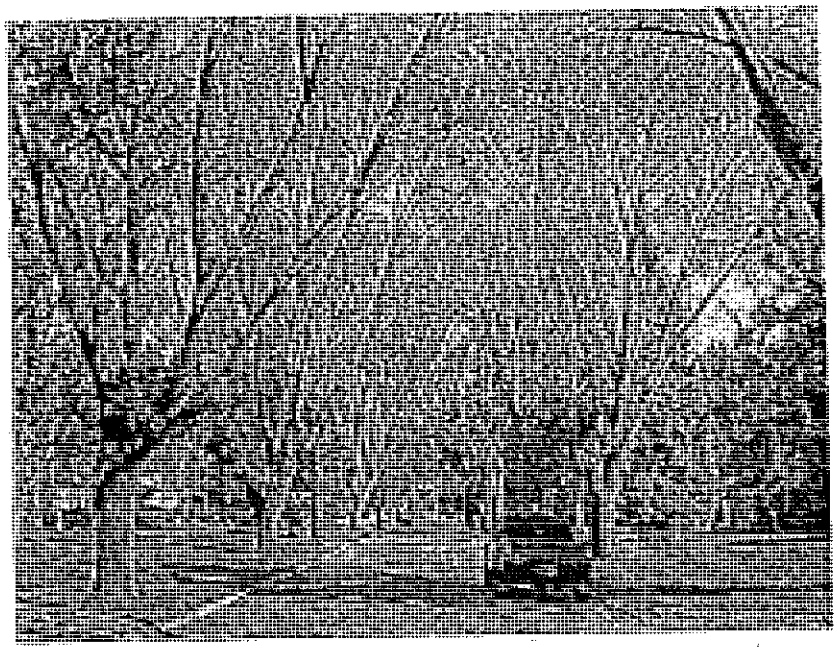
One study suggests that a single injection of emamectin benzoate may even control EAB for three years. Additional studies to further evaluate the long-term effectiveness of emamectin benzoate are underway. To date, this is the only product that controls EAB for more than one year with a single application. In addition, in side-by-side comparisons with other systemic products (neonicotinoids), emamectin benzoate was more effective.

Imidacloprid • Trunk injections with imidacloprid products have provided varying degrees of EAB control in trials conducted at different sites in Ohio and Michigan. In an MSU study, larval density in trees treated with Imicide® injections were reduced by 60 percent to 96 percent, compared to untreated controls. There was no apparent relationship between efficacy and trunk diameter or infestation pressure. In another MSU trial, imidacloprid trunk injections made in late May were more effective than those made in mid-July, and IMA-jet® injections provided higher levels of control than did Imicide®, perhaps because the IMA-jet® label calls for a greater amount of active ingredient to be applied on large trees. In an OSU study in Toledo, IMA-jet® provided excellent control of EAB on 15- to 25-inch trees under high pest pressure when trees were injected annually. However, trees that were injected every other year were not consistently protected.

In a discouraging study conducted in Michigan, ash trees continued to decline from one year to the next despite being injected in both years with either Bidrin (Inject-A-Cide B®) or imidacloprid. The imidacloprid treatments consisted of two consecutive years of Imicide® (10% imidacloprid) applied using Mauget® micro-injection capsules, or an experimental 12% formulation of imidacloprid in the first year followed by Pointer™ (5% imidacloprid) in the second year with both applied using the Wedgle™ Direct-Inject™ System. All three treatment regimes suppressed EAB infestation levels in both years, with Imicide® generally providing best control under high pest pressure in both small (six-inch DBH) and larger (16-inch DBH) caliper trees. However, larval density increased in treated and untreated trees from one year to the next. Furthermore, canopy dieback increased by at least 67 percent in all treated trees (although this was substantially less than the amount of dieback observed in untreated trees). Even consecutive years of these treatments only slowed ash decline under severe pest pressure. In another MSU study, ACECAP® trunk implants (active ingredient is acephate) did not adequately protect large trees (greater than 15-inch DBH) under high pest pressure.



EAB larvae damage the vascular system of the tree as they feed, which interferes with movement of systemic insecticides in the tree.



Noninvasive Basal Trunk Sprays with Dinotefuran

Studies to date indicate that systemic basal trunk sprays with dinotefuran are about as effective as imidacloprid treatments. MSU and OSU studies have evaluated residues in leaves from trees treated with the basal trunk spray. Results show that the dinotefuran effectively moved into the trees and was translocated to the canopy at rates similar to those of other trunk-injected insecticides, and faster than other soil-applied neonicotinoid products.

As with imidacloprid treatments, control of EAB with dinotefuran has been variable in research trials. In an MSU study conducted in 2007 and 2008, dinotefuran trunk sprays reduced EAB larval density by approximately 30 percent to 60 percent compared to the heavily infested untreated trees. The treatment was effective for only one year and would have to be applied annually. In general, control is better and more consistent in smaller trees than in large trees, but more research is needed with larger trees. Studies to address the long-term effectiveness of annual dinotefuran applications for control of EAB are underway.

Protective Cover Sprays

MSU studies have shown that applications of Onyx™, Tempo® and Sevin® SL provided good control of EAB, especially when the insecticides were applied in late May and again in early July. Acephate sprays were less effective. BotaniGard® (*Beauvaria bassiana*) was also ineffective under high pest pressure. Astro® (permethrin) was not evaluated against EAB in these tests, but has been effective for controlling other species of wood borers and bark beetles.

In another MSU study, spraying Tempo® just on the foliage and upper branches or spraying the entire tree were more effective than simply spraying just the trunk and large branches. This suggests that some cover sprays may be especially effective for controlling EAB adults as they feed on leaves in the canopy. A single, well-timed spray was also found to provide good control of EAB, although two sprays may provide extra assurance given the long period of adult EAB activity.

It should be noted that spraying large trees is likely to result in a considerable amount of insecticide drift, even when conditions are ideal. Drift and potential effects of insecticides on non-target organisms should be considered when selecting options for EAB control.

Acknowledgements

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Key Points and Summary Recommendations

- Insecticides can effectively protect ash trees from EAB.
- Unnecessary insecticide applications waste money. If EAB has not been detected within 10-15 miles, your trees are at low risk. Be aware of the status of EAB in your location. Current maps of known EAB populations can be found at www.emeraldashborer.info. Remember, however, that once a county is quarantined, maps for that county are no longer updated.
- Trees that are already infested and showing signs of canopy decline when treatments are initiated may continue to decline in the first year after treatment, and then begin to show improvement in the second year due to time lag associated with vascular healing. Trees exhibiting more than 50 percent canopy decline are unlikely to recover even if treated.
- Emamectin benzoate is the only product tested to date that controls EAB for more than one year with a single application. It also provided a higher level of control than other products in side-by-side studies.
- Soil drenches and injections are most effective when made at the base of the trunk. Imidacloprid applications made in the spring or the fall have been shown to be equally effective.
- Soil injections should be no more than 2-4 inches deep, to avoid placing the insecticide beneath feeder roots.
- To facilitate uptake, systemic trunk and soil insecticides should be applied when the soil is moist but not saturated or excessively dry.
- Research and experience suggest that effectiveness of insecticides has been less consistent on larger trees. Research has not been conducted on trees larger than 25-inch DBH. When treating very large trees under high pest pressure, it may be necessary to consider combining two treatment strategies.
- Xytect™ soil treatments are labeled for application at a higher maximum rate than other imidacloprid formulations, and we recommend that trees larger than 15-inch DBH be treated using the highest labeled rate. Merit® imidacloprid formulations are not labeled for use at this higher rate. When treating larger trees with Merit® soil treatments, best results will be obtained with two applications per year. Imidacloprid formulations for homeowners (Bayer Advanced™ Tree & Shrub Insect Control and other generic formulations) can be applied only once per year.
- Homeowners wishing to protect trees larger than 15-inch DBH should consider having their trees professionally treated.
- Treatment programs must comply with any label restrictions on the amount of insecticide that can be applied per acre in a given year.

The Cooperative Emerald Ash Borer Program

For more information and to order
additional copies of this bulletin:

www.emeraldashborer.info/

The Ohio State University EAB Outreach Team

www.ashalert.osu.edu

Purdue Extension

www.entm.purdue.edu/eab/

University of Wisconsin

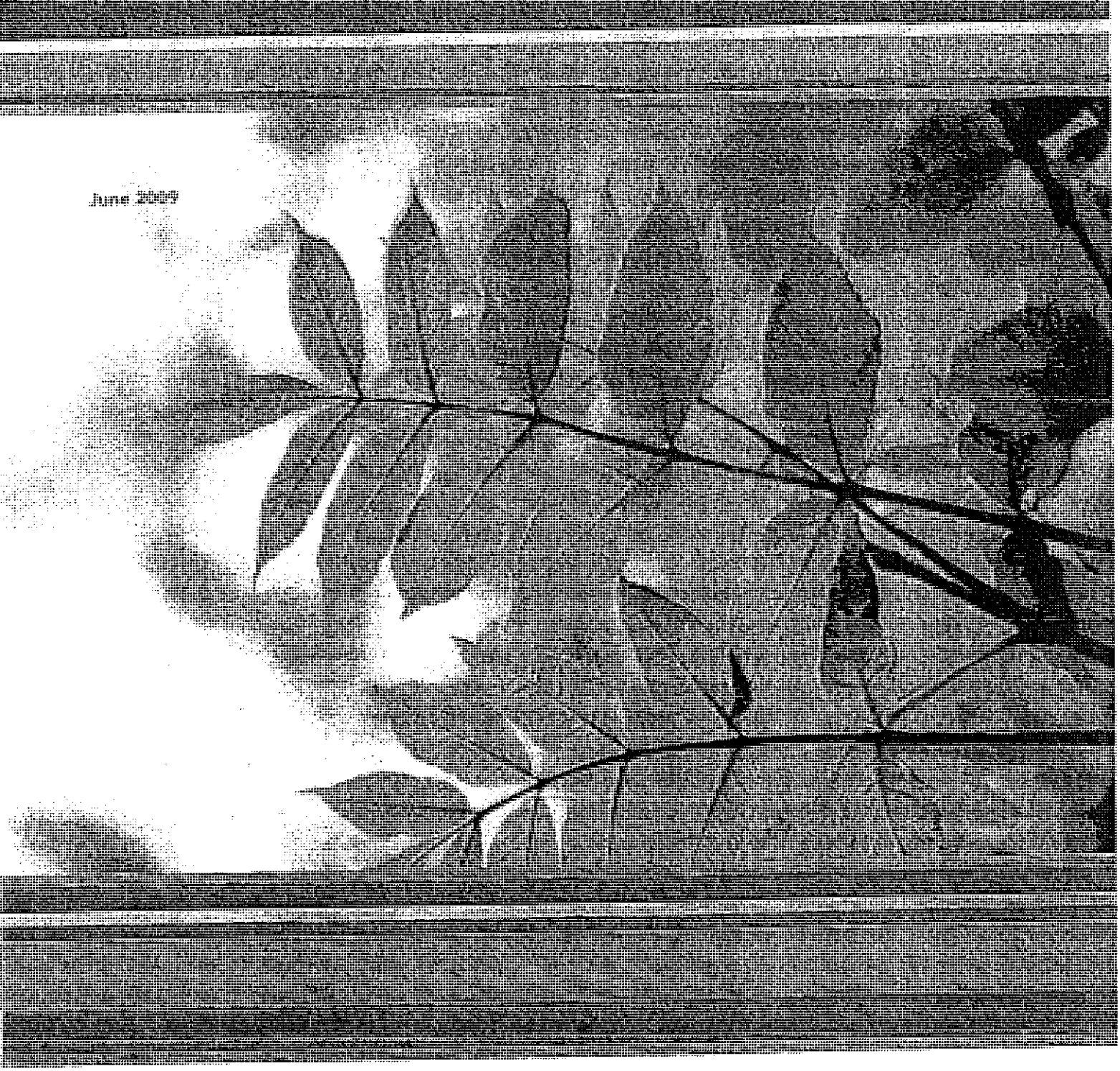
www.entomology.wisc.edu/emeraldashborer/

University of Illinois

ipm.illinois.edu/landturf/insects/

University of Minnesota

www.extension.umn.edu/issues/eab/



June 2007

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					Year Zero' is the year EAB was first found in your city.		Progression of public ash population from year EAB was found (If you have the information, include your 'END OF YEAR' public ash population for each year after EAB was first confirmed, beginning with your "Year 1". (So, list ash population as of Dec. 31, YEAR.) If not									Question 5 = Q6+Q7+Q8+Q9	These should total to equal	
Municipality	**Name**	**Email address**	**Phone number**	**Year EAB was found (This is your town's "Year 1")**	**What was your TOTAL public tree population at the beginning of your Year 1**	**What was your public ASH tree population at the beginning of your Year 1**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2. What was your beginning public ash tree population when EAB was first found? (# of trees)**	**3. What percent of your total public tree population was comprised of ash when EAB was first found? (%)**	**4. What was your public ash tree population at the end of this current year? (# of trees)**	**5. How many public ash trees were removed this past year (2011)? (# of trees)**	**6. Of the removed trees, how many were removed because of confirmed EAB infestation (confirmed by signs/symptoms found)? (# of trees)**	**7. Of the removed trees, how many were for ash tree reduction? (# of trees)**
Addison	Tim Tokarz	ttokarz@addison-il.org	630-620-2020	2009	N/A (Rough estmimate of 14000 trees)	2690	2754	2736	2698	2669	2633	2384	2690	20	2393	240	223	0
Arlington Heights	Dru Sabatello	dsabatello@vah.com	847-368-5842	2009	46000	13546	N/A	N/A	N/A	13457	13296	13000	13550	37	13000	296	60	153
Aurora	bill pauley	wpauley@aurora-il.org	630-256-3684	2008								19000	20000	20	19000	1097	1085	0
Bartlett	Steven Bosco	sbosco@vbartlett.org	630-837-0800	2009	15008	5811	N/A	N/A	N/A	5811	5811	5609	5811	38	5609	202	48	51
Batavia	Scott A. Haines	shaines@cityofbatavia.net	630-454-2400	2007	11,000	2,000	na	2000+-	1950+-	1900+-	1850+-	1600	2000	20	1600	250	250	0
Bedford Park	Jack Edwards	bppublicworks@sbcglobal.net	708-458-4038	2011									60	10	55	5	5	5
Bensenville	Ken Rubach	krubach@bensenville.il.us	630-350-3432	2011	5000	902						902	787	16	787	n/a	0	0
Bloomingdale	James M. Johnson	johnsonj@vil.bloomingdale.il.us	630-671-5804	2010									2400	25	2044	182	182	0
Blue Island	Ken Stachulak	kstachulak@cityofblueisland.org	708-597-8604	2011	N/A	387						387	345		387	9	2	5
Bluffalo Grove	none given	none given	none given	2009									6959	0.34	6426	356	318	0
Carpentersville	Sean McGovern	smcgovern@vil.carpentervillle.il.us	224-293-1608	2011	Survey is ongoing	1645					1645	1627	1645	0.26	1627	18	18	0
Cary	Cris Papierniak	Cpapierniak@caryillinois.com	1-847-639-0003	2011	6466	1806						1771	1806	28	1771	35	35	32
Country Club Hills	Maria Lehner	mlehner@countryclubhills.org	708-798-3390	2007	3200	1500	1500	1411	1309	1229	1109	1059	1800	32	1059	103	103	22
Des Plaines	Tim Ridder	TRidder@desplaines.org	847-391-6121	2010	39000	3500	3500	3500	3500	3500	3500	3400	3500	0.09	3400	100	25	50
Downers Grove	Kerstin G. von der Heide	kvonderheide@downers.us	630-434-5475	2011	23380	4009	4460	4389	4192	4130	4007	3914	4009	17.15	3914	137	0	47

Municipality	Name	Email address	Phone number	Year EAB was found (This is your town's "Year 1")	What was your TOTAL public tree population at the beginning of your Year 1	What was your public ASH tree population at the beginning of your Year 1	2006	2007	2008	2009	2010	2011	2. What was your beginning public ash tree population when EAB was first found? (# of trees)	3. What percent of your total public tree population was comprised of ash when EAB was first found? (%)	4. What was your public ash tree population at the end of this current year? (# of trees)	5. How many public ash trees were removed this past year (2011)? (# of trees)	6. Of the removed trees, how many were removed because of confirmed EAB infestation (confirmed by signs/symptoms found)? (# of trees)	7. Of the removed trees, how many were for ash tree reduction? (# of trees)
Elk Grove Village	Dave Preissig	dpreissig@elkgrove.org	847-734-8800	2011	**14100**	**5194**						34.3	4849	34.6	34.3	**35**	**0**	**0**
Evanston	Paul D'Agostino	pdagostino@cityofevanston.org	847-448-8060	2006	33746	4059	3954	3731	3396	3013	2570	2120	42050	0.134	2120	450	424	0
Village of Downers Grove	Kersin G. von der Heide, Village Forester	kvonderheide@downers.us	630-434-5475	2011									4009	0.1715	3914	137	0	47
Evergreen Park	Gavin Yeaman	gavinyeaman@yahoo.com	708-229-3354	2011 not confirmed	n/a	686						486	634	15	486	200	0	200
Franklin Park	Andrew Smolen	asmolen@vofp.com	847-708-2963	2007	unkn	unkn		unkn	unkn	unkn	1264	1233	1300	0.22	1233	43	37	6
Glen Ellyn	peggy drescher	peggyd@glenellyn.org	630-547-5505	2009	14700	1932		#1932	#1887	#1842	#1542	#1343	1900	12	1300	160	150	0
Glencoe	John Houde	johnh@villageofglencoe.org	847-835-4111	2010	10568	2010	1284	1255	1234	1201	1191	1137	1185	0.108	1137	56	37	0
Glendale Heights	Cecelia Sullivan	scullivan@glendaleheights.org	630-260-6060	2007									2900	0.33	2600	192	0.9	0.9
Glenview	Robyn Flakne	rflakne@glenview.il.us	847-904-4536	2008	26,815 (EST)	5,251 (EST)	N/A	N/A	5,250 (EST)	5,229 (EST)	5,134 (EST)	4,899 (EST; Updated to reflect removal of 60 more ash between 11/1/11 and 12/31/11)	5251	22.7	4959	235	235	0
Hazel Crest	Karl Persons	Kjpersons@ameritech.net	708-220-8506	2007									1414	11.2	887	72	72	0
Hickory Hills	Larry Boettcher	Lab012@aol.com	708/ 598-7855	0 - not found yet	3942	300	n/a	n/a	n/a	n/a	300	286	300		300	14	0	12
Hinsdale	John Finnell	jfinnell@villageofhinsdale.org	630 7889 7043	2011	12,997	1,495						1,445	2000	0.1	1960	50	13	0
Hoffman Estates	Kelly Kerr	Kelly.Kerr@Hoffmanestates.org	847-490-6800	2010									5796	0.35	5604	156	42	93

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Homewood	Jim Tresouthick	jtresouthick@village.homewood.il.us	708-206-3396	2007	approx. 16,000	2582	2582+	2582	1982	1482	1152	1072 changed from before until 12/31	2582	0.16	1152	320	320	0
Huntley	Barbara Read	bread@huntley.il.us	847-515-5262	2008									2288		2287	111	111	0
Island Lake	Joe Zurawski	willie@villageofislandlake.com	847-523-8767	2011	3976	546						546	546	0.148	546	no record	0	0
Itasca	David Sloan	willie@villageofislandlake.com	630-773-2455	2008	4,290	1010			1010	987	931	863	1010	0.15	863	149	149	0
Joliet	Jim	j_teiber@yahoo.com	815-791-8216	2011	est.200,000	est.13000	13000est	13000est	13000est	13000est	13000est	12500	20000	30	17000	200	100	75
Kenilworth	Kevin Zeoli	kzeoli@villageofkenilworth.com	847-251-1666	2006									540	0.21	103	133	133	no answer
La Grange	Don Wachter	dwachter@villageoflagrange.com	708-579-2328	2009								1400	1600	16	1400	55	40	0
Lake in the Hills	Rob Caldwell	rcaldwell@lith.org	847-960-7500	2009	10.762	3,328				3,328	3,186	2,924	3000	1	33	262	180	72
Lake Zurich	Shawn Walkington	walkington@volz.org	847-540-1696	2011	7601	3044						3009	3044	0.38	3009	35	9	9
Libertyville	Dennis Matusek	dmatusek@libertyville.com	847-918-2076	2010	8927	2300	NA	NA	NA	NA	NA	2252	2300	0.27	2252	36	28	0
Lincolnshire	Lydia Scott	lscott@village.lincolnshire.il.us	847-883-8600	2009	NA	NA	NA	NA	NA	NA	NA	543	575	0.3	543	13	3	0
Lombard	Steve Kremske	Kremskes@villageoflombard.org	630-620-5985	2009	18444	2973				2953	2920	2836	2976	16.14	2836	98	85	0

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Manhattan	Thomas Pahnke	tpahnke@villageofmanhattan.org	815-418-2061	2010	3920	744					744	704	744	0.15	704	40	40	40
Midlothian	Rick Hansen	pwsupt@villageofmidlothian.net	708-389-9658	2007									425	25	347	34	21	no answer
Mokena	Lou Tiberi	LTiberi@Mokena.org	708-479-3900	2011	15000	2400						2400	2500	17.5	2400	100	80	0
Mount Prospect	Dave Hull	dhull@mountprospect.org	847-870-5640	2010	24677	3955					3806	3556	3955	0.16	3556	250	171	0
Mundelein	Adam Boeche	aboeche@mundelein.org	847-949-3290	2011	6000	2000						2000	2000	0.32	2000	3	1	0
Naperville	Jack Mitz	mitz@naperville.il.us	630-420-6101	2008		16542 EST		16542	16411	16251	16056	15673	16323	0.26	15673	383	330	30
North Barrington	Susan Allman	sallman@northbarrington.org	847-382-5933	2011	959	959	NA	NA	NA	NA	NA	945	958		945	13	13	0
Northbrook	Ms. Terry Cichocki	Terry.Cichocki@northbrook.il.us	847/664-4125	2010	14736	2,820						2285	2652	0.19	2285	367	221	139
Northfield	Linnea O'Neill	loneill@northfieldil.org	847-784-3555	2009	421	421	NA	NA	NA	421	421	276	421	0.16	276	145	100	145
Oak Brook	Lee Hammer	lhammer@oak-brook.org	630-368-5278	2011	5770	1155						1129	1131	0.196	1129	26	2	11
Oak Forest	Richard Rinchich	rrinchich@oak-forest.org	708-535-4090	2009	8,011	1,789				1,789		1400	1789	24	1400	389	389	0
Oak Lawn	Heather Green	hgreen@oaklawn-il.gov	708-499-7098	2010	18466	1566					1611	1566	1611	8.72	1566	45	4	31
Oak Park	James Semelka	semelka@oak-park.us	708-358-5700	2008									2600	0.14	2171	290	260	no answer

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Park Forest	Robert Gunther	rgunther@vopf.com	708/481-4088	2010	EST 5,500	EST 1,500	NA	NA	NA	NA	NA	1350	1500	0.18	1350	182	182	0
Park Ridge	Tony Gliot - City Forester	tgliot@parkridge.us	847-318-5231	2009									2180	0.1	1950	108	108	0
Peotone	George Gray	admin@villageofpeotone.com	708-258-3279	2010									255		241	11	11	11
Peru	Michael Watts	ltonelli@peru.il.us	815-223-2962	2007											50	6	3	0
Plainfield	TJ Countryman	countryman@goplainfield.cor	815-230-2040	2010	37000	5300					5300	5295	5300	34%	5295	5	0	0
River Grove	Raymond Bernero -Economic Development Director	ed@vorg.us	708-878-4988	2008									115	0.05	65	50	40	10
Riverside	Michael Collins	mcollins@riverside.il.us	708.442.3590 X 502	2010	10,000	1,050	N/A	N/A	N/A	N/A	1050	990	1050	10.5	990	60	0	40
Roselle	Mike Schulz	mschulz@roselle.il.us	(630)671-2368	2010	7747	1776					1776	1663	1774	0.22	1663	111	107	0
Skokie	Liz Zimmerman	elizabeth.zimmerman@skokie.org	847-933-8427	2007	24000	unkn	3000	2968	2751	2597	2361	1984	3000	12	2249	377	365	0
St. Charles	Ben Deutsch	bdeutsch@stcharlesil.gov	630-377-4459	2008									5440	0.28	1682	674	674	0
Streamwood	Matt Mann	mmann@streamwood.org	630-736-3850	2010	10000	2670					2670	2431	2670	0.27	2470	231	220	11
Sugar Grove	Geoffrey Payton	gpayton@sugargrove.il.us	630-466-7508	2008									607	0.3	343	78	78	0
Vernon Hills	Ken Loar	kenl@vhills.org	847-680-2268	2010	10838	3515					3515	3440	3500	0.32	3440	75	63	63
Villa Park	Dan Sullivan	dans@invillapark.com	630-834-8505	2011									710	0.134	675	35	29	0

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Wauconda	Chris Esvang	cesvang@wauconda-il.gov	847-815-9740	2011								1535	1633	0.4	1535	98	97	0
West Chicago	Tim Wilcox	twilcox@westchicago.org	630 293-2255	2010									2446		2260	186	182	0
Westmont	Jonathan Yeater	jyeater@westmont.il.gov	630-981-6285	2010	No inventory, guess approx. 10,000	2011	2268	2217	2163	2083	2013	1875	2000	17	1875	138	116	0
Wheaton	Kevin Maloney	kmaloney@wheaton.il.us	630-260-2122	2010									6700	0.28	6150	87	33	49
Wheeling	Lori A. Hazlewood	lhazlewood@wheelingil.gov	847-279-6951	2010	6,295	1476						20	1476	23	20	41	36	0
Willowbrook	Garrett Hummel	ghummel@willowbrook.il.us	630-920-2230	2011	3500 EST	825 EST	825 EST	825 EST	825 EST	825 EST	825 EST	825 EST	825	25	825	N/A	N/A	N/A
Wilmette	John Kemppainen & Kevin Sorby	forestry@wilmette.com	847-853-7600	2006								1092	2966	0.16	1092	279	277	0
Winfield	Tye Loomis, Superintendent of Public Works	tloomis@villageofwinfield.com	630-933-7100	2010									893	0.16	863	15	12	0
Winnetka	Jim Stier	jstier@winnetka.org	847-716-3535	2006	no official inventory available at this time	estimated window survey was approx. 1700	1700 est.	1570 est.	1450 est.	1330 est.	1205 est.	1100 est.	1750	13	1100	117	110	0
Woodridge	Scott Sramek	ssramek@vil.woodridge.il.us	630-719-4757	2011	10,800	2600	3000	2934	2837	2775	2625	2600	3100	0.28	2600	25	10	10
Yorkville	Laura Schraw	lschraw@yorkville.il.us	630-553-8574	2008									1665	16	1645	20	20	20

your answer to question 5.										*EAB Insecticides*									
8. Of the removed trees, how many were from storm damage? (# of trees)	**9. Of the removed trees, how many were for other reasons (# of trees)?**	**10. What percent of your tree removals this year were done by the municipality? (%)**	**11. What percent of your tree removals this year were done by a contractor? (%)**	**12. What is the average DBH of your ash removals?**	**13. What was the average cost per tree for ash removals?**	**14. What was the average cost per tree stump removal?**	**15. What problems, if any, do you anticipate in keeping up with planned ash removals? (Check all that apply):**	**16. Number of public ash trees treated by your municipality this year?**	**17. Number of public ash trees planned for insecticide treatment next year (2012)?**	**Does your city chemically treat Public trees for EAB?**	**What product(s) do you use?**	**What rates do you use?**	**When do you apply pesticides (timing)?**	**18. How many public ash trees were treated by property owners this year?**	**19. What products were used when property owners treated ash trees for EAB?**	**20. In your municipality, do property owners need a permit to treat public trees?**	**21. Do you authorize treatment of any public trees that are already infested with EAB?**	**22. How is your municipality involved in property owner's treatment of public trees? (check one):**
5	12	100	0	16	372	236	Funding, Public Safety	0	0	yes, only 10 trees	treeage	out, per product label for tru	mid to late summer	not answered	Bayer Tree and Shrub	Yes	No	Municipality only issues permits and provides general information about options.
69	13	60.0%	40.0%	19	490	130	Funding	0	55	yes	Imidacloprid, Treeage	one (1) packet (1.6 oz) of Merit 75 WSP or Imidacloprid 75 WSB is applied to every 24 inches of cumulative trunk diameter, and highest rate of Treeage	April May June	150	TREE-age	No	Yes	Municipality only issues permits and provides general information about options.
12	0	100	0	10.5	273	55	Funding	0	0	yes	treeage, imidicloprid	2x for imid.	usally spring thru summer	na	na	No	No	not
76	27	75	25	15	295.5	43.5	Funding	0	1000	Yes	Safari, Merit (trunk), Merit (soil), Tree-Age, unknown product applied by Fred Miller/Rainbow	Unknown - applied by contractors at rates that they determine	April (Merit soil injection), May (Merit trunk injection, trees enrolled in Miller study, some TreeAge), June (some TreeAge, Safari)	1000	treeage	No	Yes	advises on practicality of chemical treatment if over 40% infested
0	0	25	75	16"	612	included in removal	Funding, Public Safety	0	0	Yes	xytect, tree-age	2X, Label	April, May	51	Triage, Bayer	No	Yes	We simply keep a list of addresses, who is treating, and name of product
0	0	0	1	N/A	1500	250	Funding	0	possibly 55	Yes	Treeage	Medium rate	May	0	N/A	No	Yes	We usually pay for removal
0	0	N/A	N/A	n/a	none removed	none stumped	Funding, Public Safety	0	N/A	Yes	Tree Age	Applicator follows label	Spring	N/A	N/A	No	No	We currently have no policy for the treatment of public trees by property owners at this time.
0	0	70	30	12"	200	28	none	121	125	Yes	Treeage	3ml/dbh	May	not answered	Imidacloprid (soil)	No	Yes	Municipality only issues permits and provides general information about options.
1	0	67.0%	33.0%	21	$1,800.00	125	Funding	0	0	Yes	Imidacloprid, Xytect	Highest rate listed on the label.	Spring after leaf expansion	1	Imidacloprid (Merit)	No	No	Will provide information upon request
22	16	1	0	13"	86.81	257.79	Funding, Public Safety	0	0	yes	Tree-age, Safari, Imidacloprid	Highest rate lable allows	Spring/early Summer	5	Tree AGE	No	No	Municipality only issues permits and provides general information about options.
0	0	0	100.0%	no answer	120	n/a	Funding	0	0	Yes	Imicide & Bidrin	1 capsule/2" DBH	May - July	0	n/a	No	No	Municipality only issues permits and provides general information about options.
3	0	100	0	6.7	500	75	Funding	0	0	yes	imidicloprid Merit 75WSP	12.8oz per 100 gallons of water	after leaf out during transpiration	1	Bayer	Yes	Yes	Municipality only issues permits and provides general information about options.
10	1	50	50	18	400	75	Funding	10	0	Yes	Imidicloprid & Arbor Jet products	Varies per tree	Spring	0	0	No	No	Municipality only issues permits and provides general information about options.
25	0	40.0%	60.0%	24"	432	48	Funding	0	25	yes	xytect & tree-age	1.6 oz. per 12" dia. & 2-year rate	spring	0	n/a	Yes	No	Municipality only issues permits and provides general information about options.
53	37	17.5	82.5	17.9	235.4	75	Funding, Public Safety, Not enough available staff time to inspect and follow through on removal/replacement processes	1455	1400	Yes	Triage	4 MIL's per DBH	Fall	unknown	unknown	No	Yes	allow and encourage treatment and will survey outcomes

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28	7	95	5	15	225	100	Funding, Weather Conditions	0	0	y	tree-age		fall-spring	0	N/A	Yes	No	N/A
18	8	97.0%	3.0%	17.6	365	96.5	Funding, Public Safety, Increase in numbers	0	0	Some-only specimen quality	Tree-Age	Manufacturers recommendation based on DBH	April/May	46	Tree-Age	Yes	No	Municipality only issues permits and provides general information about options.
53	37	17.5	82.5	17.9"	235.4	75	Funding, Public Safety, Not enough available staff time to inspect and follow through on removal/replacement processes	1455	1400	Not Yet, but we are planning to.	Tree-age & Xytect will be used.	N/A	Proposed Spring 2012	unknown	unknown	No	Yes	Plan to allow and encourage treatment and survey outcomes
0	0	100.0%	0.0%	15	120	40	Funding, Public Safety	0	0	Not as of Yet	N/A	N/A	N/A	unknown	unknown	No	No	provides information only
0	0	95.0%	5.0%	22	800	75	Funding, We don't have a dedicated Forestry crew. We do multiple functions.	0	0	No (as of 2/16/12)	N/A	N/A	N/A	0	n/a	No	No	no answer
10	0	50	50	14"	426	176	Funding, Public Safety	465	800	No	N/A	N/A	N/A	20	misc	Yes	Yes	we do a variety, let homeowners use their own company but we will be providing quotes from specific companies for specific products
11	9	97.0%	3.0%	17.3"	500	bined removal and stump rem	Public Safety	0	10	NO				none that were requested a permit for	n/a	Yes	Yes	Municipality only issues permits and provides general information about options.
0.09	0.01	0.95	0.05	18"	200	58	Funding	0	50	NO	N/A	N/A	N/A	unknown	Product(s)	No	No	no action at this time
0	0	99.0%	1.0%	16	210	30	Funding, Public Safety, Resident expectations	588	578	NO	N/A	N/A	N/A	Unknown	Unknown	No	No	Municipality only issues permits and provides general information about options.
1	0	1	0	9"	214	Included in #13	Funding, Public Safety	200 - Morton EAB Study	200	No				0	??	No	Yes	Municipality only issues permits and provides general information about options.
0	2	65.0%	35.0%	12"	200	100	Funding	0	0	NO	NA	NA	NA	0	0	No	No	Not involved
30	7	70.0%	30.0%	23	419.75	92	Funding, Public Safety	10	0	NO	N/A	N/A	N/A	?	xytect, tree-age	Yes	Yes	Municipality selects an approved contractor who offers discounts directly to property owners.
9	12	1	0	8.5"	403	8.5	staffing	0	0	No				89	TREE -age	Yes	No	Municipality only issues permits and provides general information about options.

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3	0	99.1%	0.9%	24	$26 an inch contractual resulting in an average of $624 per.	N/A	Funding, Public Safety, Labor	Dr. Miller experiment only	0	no	n/a	n/a	n/a	unknown	unknown	No	No	Do not allow
0	0	100	0	5.51****	N/A	N/A	Funding	0	0	no	n/a	n/a	n/a	2	N/A	No	No	not involved
all	0	95.0%	5.0%	10	n/a	n/a	Funding	0	0	no	n/a	n/a	n/a	unknown	n/a	Yes	No	Municipality only issues permits and provides general information about options.
0	0	51.0%	49.0%	18	350	50	Funding	160	0	No				0	n/a	Yes	No	Municipality only issues permits and provides general information about options.
25	0	3	97	17	238	Included in removal cost	Funding	20	50-100	no				?	?	Yes	No	Municipality only issues permits and provides general information about options.
no answer	no answer	0	1	14.89"	180	included in removal	None for removal. The problems lie in reforesting.	0	0	NO	None	NA	NA	n/a	n/a	No	No	Municipality only issues permits and provides general information about options.
10	5	5.0%	95.0%	16"	300	N/A	Funding	50	50	NO				N/A	Tree-Age	No	No	No permits reqiured
10	0	100.0%	0.0%	10	325	165	Time and staff	0	60	no				unknown	unknown	No	No	Residents must gain approval by Public Works Director
17	n/a	100.0%	0.0%	14	$75	$50	Funding	0	no anwer	No	n/a	n/a	n/a	no answer	no answer	No	No	Municipality only issues permits and provides general information about options.
6	2	100.0%	0.0%	16	445.5	240	Funding, Public Safety, Staffing Issues	0	400	No	N/A	N/A	N/A	None that we are aware of.	n/a	No	Yes	Municipality only issues permits and provides general information about options.
9	1	0.0%	100.0%	13	700	65	Funding	20	80	NO	NA	NA	NA	unknown	n/a	No	Yes	Municipality selects an approved contractor who offers discounts directly to property owners.
3	10	36.0%	64.0%	16.5	420	37.46	Funding, Lack of personnel.	0	0	No	N/A	N/A	N/A	1	Pointer	No	No	Only provides general information about options.

8. Of the removed trees, how many were from storm damage? (# of trees)	9. Of the removed trees, how many were for other reasons (# of trees)?	10. What percent of your tree removals this year were done by the municipality? (%)	11. What percent of your tree removals this year were done by a contractor? (%)	12. What is the average DBH of your ash removals?	13. What was the average cost per tree for ash removals?	14. What was the average cost per tree stump removal?	15. What problems, if any, do you anticipate in keeping up with planned ash removals? (Check all that apply):	16. Number of public ash trees treated by your municipality this year?	17. Number of public ash trees planned for insecticide treatment next year (2012)?	Does your city chemically treat Public trees for EAB?	What product(s) do you use?	What rates do you use?	When do you apply pesticides (timing)?	18. How many public ash trees were treated by property owners this year?	19. What products were used when property owners treated ash trees for EAB?	20. In your municipality, do property owners need a permit to treat public trees?	21. Do you authorize treatment of any public trees that are already infested with EAB?	22. How is your municipality involved in property owner's treatment of public trees? (check one):
0	0	0.0%	100.0%	10	350	combined removal and stump removal	Funding	0	0	NO	N/A	N/A	N/A	0	n/a	Yes	No	Municipality only issues permits and provides general information about options.
no answer	13 suspected EAB	0.95	0.05	no answer	1200	500	Funding	0	no anwer	No	NA	NA	NA	no answer	no answer	No	No	no answer
10	10	0.5	50.0%	21	1000	100	Funding	50	50	no	na	na	na	200	Tree Age	No	Yes	Provide general information
61	18	5.0%	95.0%	19	285	132	Funding, Public resistance	792	792	No	N/A	N/A	N/A	12	Tree-age	Yes	No	Municipality only issues permits and provides general information about options.
2	0	0.0%	100.0%	12	600	80	Funding	0	0	no	n/a	n/a	n/a	unknown	n/a	No	No	Municipality bears responsibility and cost for treatment and care of public trees directly without property owner assistance.
18	5	94.0%	6.0%	15	500	included in removal	Funding, Public Safety	4500	TBD	No				499	Merrit, Safari, Treeage, Xytect, Bayer	No	Yes	Municipality only issues permits and provides general information about options.
0	0	0	100	8 inches	200	NA	Funding, Public Safety	0	0	No	n/a	n/a	n/a	NA	NA	No	No	NA
6	1	80.0%	20.0%	17	400	50	Funding, Public Safety, Public perception	214	12	No	N/A	N/A	N/A	~25	Tree Age trunk injections	Yes	No	Municipality only issues permits and provides general information about options.
0	0	65.0%	35.0%	12"	240	135	Funding	0	0	No	N/A	N/A	N/A	10	Tree-age, Merit	Yes	Yes	Municipality only issues permits and provides general information about options.
13	0	1	0	14"	317	67	Funding	0	0	NA	NA	NA	NA	400	Tree-Age	Yes	No	Municipality only issues permits and provides general information about options.
0	0	64	36	16	199	75	Funding, Public Safety, 461 trees removed since Jan 1, 2011. Arborist marked @300 of these for removal this winter. Leafing out this spring we are terrified at the prospect the rate of die-off will dramatically increase beyond our resources. All funds for planting were re-allocated for removals only in 2010. We are afraid that we will not be able to keep up with the volume of removal work needed.	0	0	for industry research only	Bayer, TreeAge	4x label rate	four times a year - applied by Morton Arb research staff	Unknown	Unknown	No	No	Resident allowed to treat but advised that the City will monitor and remove tree if conditions warrant.
10	0	89	11	14	550	unk	Funding, Public Safety	0	0	Few	Tree-age	Unknown/ contracted	Late Spring	unk	unk	No	No	Municipality only issues permits and provides general information about options.
30	no answer	0.02	0.98	19.4	275	112.5	no answer	0	0	Discontinued	Outside Contractor-Imicide	6 ml	June	12	Merit	No	Yes	Municipality only issues permits and provides general information about options.

8. Of the removed trees, how many were from storm damage? (# of trees)	9. Of the removed trees, how many were for other reasons (# of trees)?	10. What percent of your tree removals this year were done by the municipality? (%)	11. What percent of your tree removals this year were done by a contractor? (%)	12. What is the average DBH of your ash removals?	13. What was the average cost per tree for ash removals?	14. What was the average cost per tree stump removal?	15. What problems, if any, do you anticipate in keeping up with planned ash removals? (Check all that apply):	16. Number of public ash trees treated by your municipality this year?	17. Number of public ash trees planned for insecticide treatment next year (2012)?	Does your city chemically treat Public trees for EAB?	What product(s) do you use?	What rates do you use?	When do you apply pesticides (timing)?	18. How many public ash trees were treated by property owners this year?	19. What products were used when property owners treated ash trees for EAB?	20. In your municipality, do property owners need a permit to treat public trees?	21. Do you authorize treatment of any public trees that are already infested with EAB?	22. How is your municipality involved in property owner's treatment of public trees? (check one):
0	0	0.0%	100.0%	18"	430	Included in removal	Funding	134	100					Onknown	Unknown	No	Yes	Municipality only issues permits and provides general information about options.
0	0	0	1	24"	760.23	combined removal and stump removal	Funding	0	0					8	Merit	No	No	Municipality only issues permits and provides general information about options.
0	0	70	30	12"	n/a	50	Funding, Public Safety	0	0					0	no answer	Yes	No	Municipality only issues permits and provides general information about options.
2	1	1	0	no answer	350	150	Funding	0	0					unknown	unknown	No	No	Municipality only issues permits and provides general information about options.
5	100%	90%	10%	8"	$85.00	$50.00	Funding, Public out-cry	0	0					Unknown	Unknown	No	No	Not allowing
0	0	0.8	0.2	18"	450	included in removal	Funding	0	0					unknown	unknown	No	No	Municipality only issues permits and provides general information about options.
10	10	0.0%	100.0%	20	500	combined removal and stump removal	Funding	0	0					10	1	No	No	Municipality only issues permits and provides general information about options.
4	0	50	50	14 inch	300	125	Funding	650	650					36	Bayer tree and shrub - imidicloprid	Yes	No	Municipality only issues permits and provides general information about options.
12	0	80.0%	20.0%	17	472	75	Funding, Public Safety	50	200					10	Merit	Yes	Yes	Municipality only issues permits and provides general information about options.
0	0	0.25	0.75	12.14	250	85	Funding	250	250					126	Merit, Bayer Tree and Shrub, Tree-age	No	Yes	Municipality only issues permits and provides general information about options.
0	0	100.0%	0.0%	12"	150	150	Funding	0	0					0	no answer	Yes	No	Municipality only issues permits and provides general information about options.
0	0	0.98	0.02	8"	350	100	Funding	0	0					0	n/a	Yes	No	not allowed at this time
12	0	100	0	13	$163.20	N/A	Funding, Time for staff to complete removals	61	N/A					Unknown	Unknown	No	No	No current program to track treamtment of public trees by property owners
2	4	1	0	not available	343.5	0 - none removed	Funding, Public Safety	0	0					none	n/a	Yes	No	Municipality only issues permits and provides general information about options.

8. Of the removed trees, how many were from storm damage? (# of trees)	9. Of the removed trees, how many were for other reasons (# of trees)?	10. What percent of your tree removals this year were done by the municipality? (%)	11. What percent of your tree removals this year were done by a contractor? (%)	12. What is the average DBH of your ash removals?	13. What was the average cost per tree for ash removals?	14. What was the average cost per tree stump removal?	15. What problems, if any, do you anticipate in keeping up with planned ash removals? (Check all that apply):	16. Number of public ash trees treated by your municipality this year?	17. Number of public ash trees planned for insecticide treatment next year (2012)?	Does your city chemically treat Public trees for EAB?	What product(s) do you use?	What rates do you use?	When do you apply pesticides (timing)?	18. How many public ash trees were treated by property owners this year?	19. What products were used when property owners treated ash trees for EAB?	20. In your municipality, do property owners need a permit to treat public trees?	21. Do you authorize treatment of any public trees that are already infested with EAB?	22. How is your municipality involved in property owner's treatment of public trees? (check one):
1	0	100.0%	0.0%	5	75	25	Funding	400+	2-300					N/A	Imidicloprid & Arbor jet	No	No	Municipality only issues permits and provides general information about options.
4	0	94	6	8" Mun 29" Contr.	$325 Mun, $783 Contr.	included	fewer $ for Sreet Improvement	1836	1800					0	not known	Yes	Yes	Municipality selects an approved contractor who offers discounts directly to property owners.
22	0	99	1	17	n/a	n/a	Time	0	0					0	n/a	Yes	No	Municipality only issues permits and provides general information about options.
5	0	1	0	22"	750	100	Funding	0	0					37 Known	Imidacloprid, Emamectin benzoate	No	No	No permit required, we inspect tree to make recommendation to treat or not.
0	5	100	0	13	350	125	Funding, Staffing	0	0					Unsure	Unsure	No	No	Provides general information
N/A	N/A	0.0%	100.0%	N/A	none removed	N/A	Funding	0	0					N/A	N/A	No	No	Property owners are currently not allowed to treat public trees
2	0	0.0%	100.0%	15	280	combined removal and stump removal	Funding, Public Safety	0	0					30	Merit, Tree-age, Bayer	Yes	Yes	Municipality only issues permits and provides general information about options.
3	0	1	0	10"	$100.00 (wage and other administrative costs)	20	Funding	0	not decided yet					n/a	n/a	Yes	No	Municipality only issues permits and provides general information about options.
7	0	0.0%	100.0%	17"	175	65	resistance from homeowners, keeping up with replacement plantings	385 (47 Treeage, 338 soil treatment)	338					unknown	Treeage, Safari, Meri, etc (soil and trunk injection primarily)	No	No	Municipality hires and monitors contractor. Municipality pays for cost of treatment. Village Forester selects trees to be treated.
5	0	90.0%	10.0%	10	350	100	Funding, Public Safety	26	25					5	triage	No	No	Municipality only issues permits and provides general information about options.
0	0	95	5	8" caliper	0	0	Funding	0	40					1	unknown	No	No	they inform us

23. Do you delay removal of treated public trees if they become infested after treatment?	24. Why are you using/allowing the use of EAB insecticides? (check all that apply)	25. Do you have an ordinance for requiring removal of infested PUBLIC ashes?	26. Do you have an ordinance for requiring removal of infested PRIVATE ashes?	27. In actuality, on average, what is the number of days between confirmation and removal of PUBLIC trees?	27.1. If removals have not been done on PUBLIC trees (no answer for #27) What is your target number of days for removals.	28. In actuality, on average, what is the number of days between confirmation and removal of PRIVATE trees?	28.1. If removals have not been done on PRIVATE trees (no answer for #28) What is your target number of days for removals.	29. Does your community have a tree replacement program?	30. How many removed ash trees were replaced this year? (# of trees)	31. Who paid what percentage of the dollars spent for ash replacements this year? Municipal	31. Who paid what percentage of the dollars spent for ash replacements this year? Resident	31. Who paid what percentage of the dollars spent for ash replacements this year? Grant	32. Do you have a program promoting replacement of removed private ashes?	33. What type of activities are you doing to increase public awareness of EAB? (check all that apply)	Any additional comments?
No	To prolong the life of individual trees., To spread out removals over a longer, more manageable time period.	No	Yes	90	N/A (Target is before May 1st)	90	N/A (Declining-Hazardous trees and those indentified as infested during EAB dormant season: 20 days . Non hazardous trees identified during flight season get a reprieve until April 1st of the following year.	Yes	137	100	0	0	Yes	News releases, Website information, Municipal newsletter, Cable TV promotions, Direct mailings to property owners, Educational displays or brochures	
Yes (elaborate below)	To prolong the life of individual trees., To spread out removals over a longer, more manageable time period.	Yes	Yes	45	N/A	N/A	N/A	Yes	210	90	0	10	No	Website information, Direct mailings to property owners, Educational displays or brochures, Village of Arlington Heights Public Access Television	
No	na	Yes	Yes			unkn		Yes	1097	28	2	70	Yes	News releases, Website information, Municipal newsletter	
No	To spread out removals over a longer, more manageable time period., To get the trees past the initial wave of EAB and hope treatments can be discontinued thereafter.	Yes	Yes	30		60	60	Yes	25	50	50	0	No	News releases, Website information, Municipal newsletter, Educational displays or brochures, public awareness efforts at public events/celebrations such as earth day arbor day, national night out, and bartlett farmers market	
Yes (elaborate below)	We are not treating any Ash trees but by allowing trees to be treated, we are able to spread the removal of a small number of trees over a longer time if they become infested.	Yes	No		37	50-80	65	Yes	25		50	50	0	Website information, Direct mailing to property owners if an EAB infestation is confirmed.	
Yes (elaborate below)	To prolong the life of individual trees., To spread out removals over a longer, more manageable time period.	No	No			depends on circumstances		Yes	5				No	Municipal newsletter	We have a very small amount of ash trees, and I believe there are none on private property in our residential area, and maybe a few on private property in our industrial area, which the company owners had removed at their own expense.
N/A	We will be evaluating the use of insecticides beginning in 2012.	No	No	N/A	N/A	N/A	N/A	Yes	N/A	0	0	0	No	N/A	Although we have not been officially confirmed as having EAB many of the ash trees in the community are showing signs of infestation and decline. We suspect EAB will be confirmed by the end of 2011 or the beginning of 2012.
Yes (elaborate below)	To prolong the life of individual trees., To spread out removals over a longer, more manageable time period.	Yes	Yes			30		Yes	170				No	Website information, Municipal newsletter, Cable TV promotions, Educational displays or brochures	#32 was not answered....I said "no"
No	To prolong the life of individual trees.	No	No	30	30 PER TREE	n/a		No	0	0	0	0	No	Website information, Municipal newsletter, Educational displays or brochures	
Yes (elaborate below)	no answer	Yes	Yes			no answer		Yes	238				No	Website information, Municipal newsletter	
n/a	n/a	No	No	218	N/A	n/a	N/A (Village does not require removal of private trees)	Yes	18	100	0	0	No	News releases, Website information, Municipal newsletter, Educational displays or brochures	
No	To prolong the life of individual trees., To spread out removals over a longer, more manageable time period., To get the trees past the initial wave of EAB and hope treatments can be discontinued thereafter.	Yes	Yes	90		n/a	60	Yes	0 Program on hold	0	0	0	No	News releases, Website information, Municipal newsletter, Educational displays or brochures	
No	To prolong the life of individual trees., To get the trees past the initial wave of EAB and hope treatments can be discontinued thereafter.	No	Yes	21		30		Yes	10	100	0	0	No	News releases, Seminars, Municipal newsletter, Cable TV promotions, Direct mailings to property owners, Educational displays or brochures	
No	To spread out removals over a longer, more manageable time period.	No	No	30	NA	90	NA	Yes	35	75	25	0	No	Website information, Direct mailings to property owners, Educational displays or brochures	
Haven't crossed that bridge yet, though expect to work with residents. If the trees decline we will check for decline and work with residents	To prolong the life of individual trees., To spread out removals over a longer, more manageable time period., to get past initial wave of EAB and hope treatments can be decreased thereafter	No	No	30	NA	n/a	NA	Yes	112	29	0	71	No	News releases, Website information, Municipal newsletter, Direct mailings to property owners, Educational displays or brochures, doorhangers	

23. Do you delay removal of treated public trees if they become infested after treatment?	24. Why are you using/allowing the use of EAB insecticides? (check all that apply)	25. Do you have an ordinance for requiring removal of infested PUBLIC ashes?	26. Do you have an ordinance for requiring removal of infested PRIVATE ashes?	27. In actuality, on average, what is the number of days between confirmation and removal of PUBLIC trees?	27.1. If removals have not been done on PUBLIC trees (no answer for #27) What is your target number of days for removals.	28. In actuality, on average, what is the number of days between confirmation and removal of PRIVATE trees?	28.1. If removals have not been done on PRIVATE trees (no answer for #28) What is your target number of days for removals.	29. Does your community have a tree replacement program?	30. How many removed ash trees were replaced this year? (# of trees)	31. Who paid what percentage of the dollars spent for ash replacements this year? Municipal	31. Who paid what percentage of the dollars spent for ash replacements this year? Resident	31. Who paid what percentage of the dollars spent for ash replacements this year? Grant	32. Do you have a program promoting replacement of removed private ashes?	33. What type of activities are you doing to increase public awareness of EAB? (check all that apply)	Any additional comments?
N/A	N/A	Yes	No		90	Not applicable	Unknown	Yes	28	Not applicable	100	0	Yes	News releases, Website information, Municipal newsletter, Cable TV promotions, Direct mailings to property owners	
No	To prolong the life of individual trees., To get the trees past the initial wave of EAB and hope treatments can be discontinued thereafter.	Yes	Yes	45		45		Yes	370	72.5	0	27.5	No	News releases, Website information, Educational displays or brochures	
Haven't crossed that bridge yet, though expect to work with residents. If the trees decline we will check for decline and work with residents	To prolong the life of individual trees., To spread out removals over a longer, more manageable time period., To get past the initial wave of EAB and hope treatments can be decreased thereafter	No	No			n/a		Yes	112				No	News releases, Website information, Municipal newsletter, Direct mailings to property owners, Educational displays or brochures, doorhangars	
If the tree is hazardous then it will be removed. We have delayed the removal of treated trees for reduction puposes.	To prolong the life of individual trees., To spread out removals over a longer, more manageable time period.	No	No	unknown	n/a	unknown	n/a	Yes	200	49	0	51	Yes	News releases	We still have no confirmed cases of EAB but in 2011 we began proceeding as if we have it. Our cost per removal is very low because of the trees targeted. Many were very small as to not immediatly impact the overall tree canopy.
no answer	D.N.A.	No	No	90	n/a	n/a	n/a	Yes	66	100	0	0	No	News releases, Website information, Municipal newsletter	I was interviewed and a story appeared in Pioneer Press (local) and Chicago Sun Times in April 2011 about the effects of EAB and woodpeckers in Franklin Park's ash trees.
Yes (elaborate below)	To prolong the life of individual trees., To spread out removals over a longer, more manageable time period., To get the trees past the initial wave of EAB and hope treatments can be discontinued thereafter.	Yes	Yes	45		we havent started sending letters yet		Yes	0.75	70	0	30	Yes	News releases, Website information, Seminars, Municipal newsletter, Cable TV promotions, Direct mailings to property owners, Educational displays or brochures, tagging ash trees with laminated cards that id what eab is and how to identify an ash tree	
when it is dead	To prolong the life of individual trees., To spread out removals over a longer, more manageable time period.	Yes	No	30	n/a	n/a	e unless a falling hazard on neighbor property, then 30 day	Yes	50	47	0	53	Yes	Website information, Municipal newsletter, Direct mailings to property owners, Educational displays or brochures	
n/a	n/a	Yes	Yes			30 days		Yes	87				No	News releases, Website information, Municipal newsletter, Cable TV promotions, Direct mailings to property owners, Educational displays or brochures	
No	To prolong the life of individual trees., To spread out removals over a longer, more manageable time period., To evaluate the effectiveness of different treatment approaches	No	No	70	We have done removals of public trees, so there is an answer for #27. However, that answer (70 days) differs from our target of 45 days.	Unknown	Thus far we are not requiring ash removals from private property; therefore there is no target number of days. If we institute a removal requirement, we will likely follow our DED target of 45 days.	Yes	117	45	0	55	No	News releases, Website information, Seminars, Municipal newsletter, Cable TV promotions, Direct mailings to property owners, Educational displays or brochures	
Yes (elaborate below)	To prolong the life of individual trees., To spread out removals over a longer, more manageable time period., Research	No	No			670		Yes	0				Yes	News releases, Municipal newsletter, Cable TV promotions, Educational displays or brochures	
Yes (elaborate below)	Homeowner decision	No	No	n/a	n/a	n/a	n/a	Yes	0	0	100%	0	Yes	Municipal newsletter	
unknown	To prolong the life of individual trees.	Yes	Yes	14		30		Yes	0	85	15	N/A	No	News releases, Website information, Municipal newsletter, Cable TV promotions, Educational displays or brochures	
no answer	To prolong the life of individual trees., To spread out removals over a longer, more manageable time period.	Yes	Yes			unknown		Yes	123				No	News releases, Website information, Municipal newsletter, Cable TV promotions, Educational displays or brochures	

23. Do you delay removal of treated public trees if they become infested after treatment?	24. Why are you using/allowing the use of EAB insecticides? (check all that apply)	25. Do you have an ordinance for requiring removal of infested PUBLIC ashes?	26. Do you have an ordinance for requiring removal of infested PRIVATE ashes?	27. In actuality, on average, what is the number of days between confirmation and removal of PUBLIC trees?	27.1. If removals have not been done on PUBLIC trees (no answer for #27) What is your target number of days for removals.	28. In actuality, on average, what is the number of days between confirmation and removal of PRIVATE trees?	28.1. If removals have not been done on PRIVATE trees (no answer for #28) What is your target number of days for removals.	29. Does your community have a tree replacement program?	30. How many removed ash trees were replaced this year? (# of trees)	31. Who paid what percentage of the dollars spent for ash replacements this year? Municipal	31. Who paid what percentage of the dollars spent for ash replacements this year? Resident	31. Who paid what percentage of the dollars spent for ash replacements this year? Grant	32. Do you have a program promoting replacement of removed private ashes?	33. What type of activities are you doing to increase public awareness of EAB? (check all that apply)	Any additional comments?
Trees are removed, regardless of treatment, cyclically	Experimentation only	No	Yes	We are in a critical stage of managing EAB. Removals are on a cyclic basis, and ALL of our remaining trees have EAB due to a convergent population of EAB. We had four initial years to to remove all ash. Due to budgetary conflicts, we are now on a five year plan. All ash are infested, declining rapidly or are dead, and I can't give an answer becasue of our cyclic schedule.		60		Yes	320	74	1	25	Yes	News releases, Website information, Seminars, Municipal newsletter, Cable TV promotions, Direct mailings to property owners, Educational displays or brochures, Marquee and water billing messages	Homewood has remained committed to our own management of EAB, while at the same time reaching out to neighboring and needy communities requiring direction, in order to share techniques of managment. Homewood realizes that we are not alone in this fight, and as a result aid those communties that ask for help that have no tree based leadership.
We will give 1 year before removal	do not regulate	Yes	No			N/A		Yes	80				No	News releases, Website information, Municipal newsletter, Direct mailings to property owners, Educational displays or brochures	**** Question 12. Listed 5.51 average DBH for 103 trees. Need also to list average 53.12 DBH for the remaining 8 trees (oldest section in the Village with huge trees).
Yes (elaborate below)	To spread out removals over a longer, more manageable time period.	Yes	Yes	No detail, hazard need	n/a	No detail, hazard need	n/a	No	none	n/a	n/a	n/a	No	Website information	Island Lake has just recently found EAB to be present. No Ash trees have been removed as a result of infestation. All work done has been due to storm damage. Due to budget constraints, NO trees have been replanted as a result of these removals.
Yes (elaborate below)	To prolong the life of individual trees., To spread out removals over a longer, more manageable time period., To get the trees past the initial wave of EAB and hope treatments can be discontinued thereafter.	Yes	Yes	30	30	45	30	Yes	50	0	0	100	No	News releases, Website information	
No	To prolong the life of individual trees., To spread out removals over a longer, more manageable time period.	No	No	14	14	When the tree becomes a saftey issue they are forced to remove.	30	No	5	100	0	90	No	News releases, Website information, Seminars, Cable TV promotions, Educational displays or brochures	Because of budget cuts we know longer have a tree replacement plan. The city was awarded a $20,000 grant, this will be used to replace a few of the trees spring 2012, but will not help out are situation much. We are predicting the removal of around 10,000 trees in the next 5 years.
No	We are not using insecticides.	No	No			no answer		Yes	45				Yes	Website information, Municipal newsletter, Direct mailings to property owners, Educational displays or brochures	
Haven't yet experienced this situation	To prolong the life of individual trees.	Yes	Yes	na		We don't reqiure removal until the tree becomes a hazard		Yes	40	80	0	20	No	News releases, Website information, Direct mailings to property owners	
Trees are monitored for severe decline	To prolong the life of individual trees.	Yes	Yes	Depends on staff and condition of tree	N/A	Depends on condition of tree	N/A	No	185	75	0	25	No	News releases, Website information, Municipal newsletter, Educational displays or brochures	
no answer	To prolong the life of individual trees.	Yes	Yes		10	30 days	30	Yes	35		100	0	No	News releases, Website information, Municipal newsletter	
No	To prolong the life of individual trees., To spread out removals over a longer, more manageable time period., To get the trees past the initial wave of EAB and hope treatments can be discontinued thereafter.	Yes	Yes	NA	120 Days	unknown	NA	No	20	0	100	0	No	Website information, Municipal newsletter, Educational displays or brochures	
No	To prolong the life of individual trees., To spread out removals over a longer, more manageable time period., To get the trees past the initial wave of EAB and hope treatments can be discontinued thereafter.	Yes	Yes	14		30		Yes	13	100	0	0	Yes	News releases, Website information, Municipal newsletter, Cable TV promotions, Direct mailings to property owners, Educational displays or brochures	
No	To prolong the life of individual trees.	Yes	Yes	45	NA	45	NA	Yes	75	100	0	0	No	News releases, Website information, Educational displays or brochures	

23. Do you delay removal of treated public trees if they become infested after treatment?	24. Why are you using/allowing the use of EAB insecticides? (check all that apply)	25. Do you have an ordinance for requiring removal of infested PUBLIC ashes?	26. Do you have an ordinance for requiring removal of infested PRIVATE ashes?	27. In actuality, on average, what is the number of days between confirmation and removal of PUBLIC trees?	27.1. If removals have not been done on PUBLIC trees (no answer for #27) What is your target number of days for removals.	28. In actuality, on average, what is the number of days between confirmation and removal of PRIVATE trees?	28.1. If removals have not been done on PRIVATE trees (no answer for #28) What is your target number of days for removals.	29. Does your community have a tree replacement program?	30. How many removed ash trees were replaced this year? (# of trees)	31. Who paid what percentage of the dollars spent for ash replacements this year? Municipal	31. Who paid what percentage of the dollars spent for ash replacements this year? Resident	31. Who paid what percentage of the dollars spent for ash replacements this year? Grant	32. Do you have a program promoting replacement of removed private ashes?	33. What type of activities are you doing to increase public awareness of EAB? (check all that apply)	Any additional comments?
No	N/A	No	No	n/a	90	n/a	180	No	18	100	0	0	No	Website information, Municipal newsletter, Direct mailings to property owners, Educational displays or brochures	
no answer	no answer	No	No			no answer		Yes	34				Yes	Website information, Municipal newsletter, Educational displays or brochures	
Yes (elaborate below)	To prolong the life of individual trees., To spread out removals over a longer, more manageable time period., To get the trees past the initial wave of EAB and hope treatments can be discontinued thereafter.	Yes	Yes	250	90	250	90	Yes	60	100	0	0	No	News releases, Website information, Municipal newsletter, Cable TV promotions, Educational displays or brochures	
No	To prolong the life of individual trees., To spread out removals over a longer, more manageable time period., To get the trees past the initial wave of EAB and hope treatments can be discontinued thereafter.	Yes	Yes	10		46	Per ordinance 10 days during flight season and 30 days outside the flight season.	Yes	216	85	5	0	No	News releases, Website information, Seminars, Municipal newsletter, Cable TV promotions, Direct mailings to property owners, Educational displays or brochures	
No	n/a	No	No	10	n/a	n/a-no private trees confirmed yet	30	No	3	100	0	0	No	News releases, Website information	
Yes (elaborate below)	To prolong the life of individual trees., To spread out removals over a longer, more manageable time period., To get the trees past the initial wave of EAB and hope treatments can be discontinued thereafter.	Yes	Yes	60		60		No	383	50	0	50	No	Website information, Seminars, Municipal newsletter, Educational displays or brochures	
NA	To prolong the life of individual trees., To get the trees past the initial wave of EAB and hope treatments can be discontinued thereafter.	No	No		NA	NA	NA	Yes	20	NA	50	50	No	News releases, Direct mailings to property owners, Educational displays or brochures	
Yes (elaborate below)	To prolong the life of individual trees., To spread out removals over a longer, more manageable time period.	Yes	Yes	90	30-60 days	45		Yes	351	80	0	20	No	News releases, Website information, Seminars, Municipal newsletter, Cable TV promotions, Direct mailings to property owners, Educational displays or brochures	
No	Residents are using them now	Yes	Yes	15	15	15	15	No	50	100	0	0	No	News releases, Website information, Municipal newsletter, Cable TV promotions, Direct mailings to property owners, Educational displays or brochures	
It has not been talked about yet.	To prolong the life of individual trees., To spread out removals over a longer, more manageable time period.	No	No	1		no answer	ASAP But No Ordnance right now it is being looked into	Yes	24 all public	100		0	No	Website information, Municipal newsletter	EAB was confirmed in 2011. We have only 2 infested trees that we had to remove. Ordinances will be looked at to be combined with our existing ordinance for D.E.D.
No	Resident use at their risk	Yes	Yes	Unknown, unless hazard removals were pursued in winter due to lack of canopy and being outside of flight season	N/A	75	UNDER 75	No	7	0	100	0	No	News releases, Website information, Seminars, Municipal newsletter, Cable TV promotions, Educational displays or brochures	
This has not been addressed yet.	This has not been addressed	No	No	300	NA	not applicable	NA	Yes	114	0	0	0	No	Cable TV promotions, Educational displays or brochures, one on one education	At this time, our municipality has not addressed and set policy on EAB
Yes (elaborate below)	To prolong the life of individual trees.	Yes	Yes			30 days		Yes	100				No	News releases, Website information, Municipal newsletter, Cable TV promotions, Educational displays or brochures	

23. Do you delay removal of treated public trees if they become infested after treatment?	24. Why are you using/allowing the use of EAB insecticides? (check all that apply)	25. Do you have an ordinance for requiring removal of infested PUBLIC ashes?	26. Do you have an ordinance for requiring removal of infested PRIVATE ashes?	27. In actuality, on average, what is the number of days between confirmation and removal of PUBLIC trees?	27.1. If removals have not been done on PUBLIC trees (no answer for #27) What is your target number of days for removals.	28. In actuality, on average, what is the number of days between confirmation and removal of PRIVATE trees?	28.1. If removals have not been done on PRIVATE trees (no answer for #28) What is your target number of days for removals.	29. Does your community have a tree replacement program?	30. How many removed ash trees were replaced this year? (# of trees)	31. Who paid what percentage of the dollars spent for ash replacements this year? Municipal	31. Who paid what percentage of the dollars spent for ash replacements this year? Resident	31. Who paid what percentage of the dollars spent for ash replacements this year? Grant	32. Do you have a program promoting replacement of removed private ashes?	33. What type of activities are you doing to increase public awareness of EAB? (check all that apply)	Any additional comments?
Yes (elaborate below)	To prolong the life of individual trees., To spread out removals over a longer, more manageable time period., To get the trees past the initial wave of EAB and hope treatments can be discontinued thereafter.	No	No	30	30	Varies	60	Yes	32	0	100	0	No	News releases, Website information, Municipal newsletter, Cable TV promotions, Direct mailings to property owners, Educational displays or brochures	
Yes (elaborate below)	n/a to give residents an option	Yes	Yes			90		No	no answer				No	News releases, Website information, Seminars, Municipal newsletter, Educational displays or brochures	
No	no answer	No	No			n/a		Yes	none-first year of symptoms.				No	News releases, Cable TV promotions	
no answer	no answer	No	No			n/a		No	78				No	Seminars, Educational displays or brochures	
No	Not allowing	No	Yes	Unknown	na	NA	na	No	1				No	ws releases, Municipal newsletter	
n/a	n/a	Yes	Yes			60 days		Yes	5				Yes	News releases, Website information, Municipal newsletter, Cable TV promotions, Direct mailings to property owners, Educational displays or brochures	The Dutch Elm disease hit River Grove very hard but, it taught us the importance of a diversified inventory of trees. That lesson was a primary consideration with every tree-planting effort since then.
No	To prolong the life of individual trees.	Yes	Yes	17		30		Yes	30	0	0	100	Yes	News releases, Website information, Municipal newsletter, Cable TV promotions, Educational displays or brochures, IDNR door hangers	Thank you for initiating this survey, I look forward to reviewing the results to determine other community actions in comparison to our Village
No	To prolong the life of individual trees., To spread out removals over a longer, more manageable time period., To get the trees past the initial wave of EAB and hope treatments can be discontinued thereafter.	Yes	Yes	30	before june 1 or 30 days	30	before june 1 flight season	Yes	8	50	50	0	No	News releases, Website information, Municipal newsletter, Educational displays or brochures	
Yes (elaborate below)	To prolong the life of individual trees., To spread out removals over a longer, more manageable time period.	No	No	75	n/a	N/A	n/a	Yes	all are replaced	100	0	0	No	Website information, Municipal newsletter, Direct mailings to property owners, Educational displays or brochures	Regarding the treatment question - we will allow a delay in removal only if the tree is not hazardous and it appears as though the treatment killed the larvae.
Yes (elaborate below)	To prolong the life of individual trees., To get the trees past the initial wave of EAB and hope treatments can be discontinued thereafter.	Yes	Yes			n/a		Yes	674				No	Website information, Municipal newsletter	
No	only allow if resident funds it	No	No	90	90	We don't remove private trees		Yes	200	84	0	16	No	News releases, Website information, Municipal newsletter, Cable TV promotions, Village functions-Summerfest, Blood drive, Environmental Fair	
n/a	n/a	No	No			none yet		Yes	59				No	Website information, Municipal newsletter, Educational displays or brochures	EAB is spreading to larger DBH trees throughout the village. Contractor costs will become an issue as well as reforestation. Removing more than we are planting annually!!
Yes (elaborate below)	To spread out removals over a longer, more manageable time period., To get the trees past the initial wave of EAB and hope treatments can be discontinued thereafter.	No	Yes	N/A	90	N/A	N/A	Yes	75	100	0	0	No	Website information, Cable TV promotions, Educational displays or brochures	Our current ordinance covers any tree on private property that is infested with a disease or insect to be removed after notification from the Village that is a public nusiance. We will not be requiring the removal of infested ashes unless they pose a safety risk to others. We only remove infested ash trees during the dormant season, not when they are discoved to be infested.
No	not in use	Yes	Yes			30		No	none				No	News releases, Website information, Municipal newsletter, Educational displays or brochures	

23. Do you delay removal of treated public trees if they become infested after treatment?	24. Why are you using/allowing the use of EAB insecticides? (check all that apply)	25. Do you have an ordinance for requiring removal of infested PUBLIC ashes?	26. Do you have an ordinance for requiring removal of infested PRIVATE ashes?	27. In actuality, on average, what is the number of days between confirmation and removal of PUBLIC trees?	27.1. If removals have not been done on PUBLIC trees (no answer for #27) What is your target number of days for removals.	28. In actuality, on average, what is the number of days between confirmation and removal of PRIVATE trees?	28.1. If removals have not been done on PRIVATE trees (no answer for #28) What is your target number of days for removals.	29. Does your community have a tree replacement program?	30. How many removed ash trees were replaced this year? (# of trees)	31. Who paid what percentage of the dollars spent for ash replacements this year? Municipal	31. Who paid what percentage of the dollars spent for ash replacements this year? Resident	31. Who paid what percentage of the dollars spent for ash replacements this year? Grant	32. Do you have a program promoting replacement of removed private ashes?	33. What type of activities are you doing to increase public awareness of EAB? (check all that apply)	Any additional comments?
No	To prolong the life of individual trees., To spread out removals over a longer, more manageable time period., Possible chemical introduction to stop infestation with etter results.	No	No	30		N/A	Tree has to pose a hazard, before the codes take effect.	Yes	6	0	100	0	No	News releases, Website information, Municipal newsletter, Direct mailings to property owners, Educational displays or brochures, Door hangers	Maybe, what goals were formed once EAB was confirmed within municipality. And a more detailed responce to what to do for private tree removals. Example- we send certified letters to each residence confirmed with EAB private tree inspect, to not only explain the history. But to notify tree will have to br removed in the near future due to emminent death.(allowing them for future possible removal expenses 0.
Yes (elaborate below)	To prolong the life of individual trees., To get the trees past the initial wave of EAB and hope treatments can be discontinued thereafter.	Yes	Yes			No Data		Yes	20				No	News releases, Website information, Municipal newsletter, Educational displays or brochures	
No	We are not.	Yes	Yes	21		14		Yes	0	No replacements- n/a	n/a	n/a	No	News releases, Website information, Direct mailings to property owners	
No	To prolong the life of individual trees.	Yes	Yes			30		Yes	13				No	News releases, Website information, Cable TV promotions, Educational displays or brochures	
No	Homeowners decision for private trees	Yes	Yes	10		30		Yes	41	100	0	0	No	News releases, Website information, Seminars, Municipal newsletter, Cable TV promotions, Educational displays or brochures	
No	We do not currently use EAB insecticides	No	No		N/A	Within the year	N/A	No	N/A	N/A	0	0	No	Website information, Municipal newsletter, Educational displays or brochures	Currently, the Village of Willowbrook has not had a confirmed case of EAB but we expect within the next year to have at least several.
Yes (elaborate below)	To prolong the life of individual trees.	Yes	Yes	30		30		Yes	179	29	21	50	Yes	Website information, Municipal newsletter, Direct mailings to property owners, Educational displays or brochures	
No	To prolong the life of individual trees., To spread out removals over a longer, more manageable time period., To get the trees past the initial wave of EAB and hope treatments can be discontinued thereafter.	Yes	No			n/a		Yes	7				No	News releases, Website information, Seminars, Municipal newsletter, Cable TV promotions, Direct mailings to property owners, Educational displays or brochures	
Sometimes removal is delayed until noticeable signs and symptoms are apparent due to some residents' concerns.	To prolong the life of individual trees., To get the trees past the initial wave of EAB and hope treatments can be discontinued thereafter., Public support for treatment was great when EAB was first discovered.	Yes	Yes	45	30	45	30	Yes	107	75	5	20	Yes	News releases, Website information, Municipal newsletter, Educational displays or brochures, respond to residents' phone calls	Winnetka does not have a street tree inventory. However, when EAB was frist confirmed in 2006, a "window survey" of all parkway Ash trees was done. All numbers regarding populations are estimates.
No	To spread out removals over a longer, more manageable time period., To get the trees past the initial wave of EAB and hope treatments can be discontinued thereafter.	Yes	Yes	15		30		Yes	25	100	0	0	No	News releases, Website information, Municipal newsletter, Educational displays or brochures	
Yes (elaborate below)	To prolong the life of individual trees., To get the trees past the initial wave of EAB and hope treatments can be discontinued thereafter.	Yes	Yes			30		Yes	5				No	News releases, Website information	

From: Mike Fitzpatrick [mailto:mike@homertree.com]
Sent: Tuesday, November 06, 2012 9:33 AM
To: Dan Gombac
Cc: Ryan Countryman
Subject: RE: 2012/13 Tree Trimming Extension

Dan
Ryan Countryman and I came up with some of the following points from our knowledge and experience of what we are seeing over the last few years. Ryan will most likely be managing this contract through this winter. Let us know if you have any questions or concerns.

#1- While treating Ash trees can be successful given the proper timing; it is still a big gamble on whether or not it will work. Obviously, it is less expensive to treat these trees over 5 years rather than remove them and replant, but what is the percentage of these that are already beyond the point of being vigorous and able to survive? 50%, 75%, etc?

- Imidacloprid *used to work* very well in control of Emerald Ash borer, however now the product does very little to stop EAB; as the insect has built up a tolerance to the chemical. How long will emamectin benzoate (Tree-age) work?? Will treatment still ultimately equate to removals and wasted funds?

#2- Timing is everything. If an Ash is not treated prior to heavy populations of EAB infestation, successful treatment if very unlikely. If the village of Darien has performed some treatments in the past have the trees been assessed? When treatment fails, signs sometimes do not present for the greater part of a growing season. This ultimately will result in the decision to remove the hazardous (or future hazardous) tree if treatments have not been successful enough to warrant continuance.

#3- With all Ash trees removed and replaced with smaller caliper trees, the annual pruning budget will have more funds available.

#4- Time and money will have to be spent to survey the village and decide which trees are worth treating. Of the 2600 identified Ash trees--how many of them are currently worth treating? Beginning a treatment program when EAB is already so prevalent in the village will not be easy.

Hope this helps. Let us know when you're back from vacation and we can start in on the contract.

Best regards

Mike Fitzpatrick
Chief Operating Officer
Homer Tree Care, Inc.
14000 S. Archer Ave.
Lockport, IL 60441
Office: 815-838-0320
Fax: 815-838-0375
www.facebook.com/homertree

From: Dan Gombac [mailto:dgombac@darienil.gov]
Sent: Monday, November 05, 2012 12:00 PM

To: Mike Fitzpatrick
Subject: FW: 2012/13 Tree Trimming Extension

Mike:

Att please find the cost comparison for EAB treatment and removal. Please let me know your thoughts.

Thanks

Daniel Gombac
Director of Municipal Services
630-353-8106

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http://www.darien.il.us/Departments/Administration/CityNews.html

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From: Mike Fitzpatrick [mailto:mike@homertree.com]
Sent: Monday, November 05, 2012 11:40 AM
To: Dan Gombac
Subject: RE: 2012/13 Tree Trimming Extension

Hey Dan
Did you ever send that EAB info to me for review?

Mike Fitzpatrick
Chief Operating Officer
Homer Tree Care, Inc.
14000 S. Archer Ave.
Lockport, IL 60441
Office: 815-838-0320
Fax: 815-838-0375
www.facebook.com/homertree

From: Dan Gombac [mailto:dgombac@darienil.gov]
Sent: Tuesday, October 09, 2012 5:19 PM
To: Rich Reposh; Mike Fitzpatrick
Cc: Bryon Vana; Ashley Prueter; Dan Salvato
Subject: RE: 2012/13 Tree Trimming Extension

Good afternoon Gentlemen:

Dan Gombac

From: David Kusnierz <dkusnierz@savatree.com>
Sent: Monday, December 03, 2012 5:20 PM
To: Dan Gombac
Subject: Fw: EAB Injections.

-----Original message-----
From: David Kusnierz <dkusnierz@savatree.com>
To: David Kusnierz <dkusnierz@savatree.com>
Sent: Mon, Dec 3, 2012 23:14:56 GMT+00:00
Subject: Fw: EAB Injections.

David Kusnierz
Arborist
Autumn-SavaTree
847-912-5764<tel:8479125764>
Dkusnierz@savatree.com<mailto:Dkusnierz@savatree.com>
Sent via DroidX2

-----Original message-----
From: David Kusnierz <dkusnierz@savatree.com>
To: 'Dan Gombac' <dgombac@darienil.gov>
Sent: Wed, Nov 14, 2012 15:23:31 GMT+00:00
Subject: RE: EAB Injections.

Daniel. I have been directly involved in research conducted at the Morton Arboretum regarding EAB. Treatment works, period. BUT. If the trees are severely infested then removal is the best option. I love trees and feel strongly that a mature canopy can make all the difference in a community. Municipalities that are losing large amounts of their trees from inaction and lack of funding are doing their constituents a disservice, in my opinion. I can assure you of one thing, Dan- left untreated your trees will die. You can't let the trees sit or they will go down. There is a numbers side to this, true. But the value of the trees to the community is really, really far greater than a removal cost or the price to treat. You need an EAB plan. A tree inventory, or at least an ash inventory, with a grading system so you can determine which trees might be worth investing in and which trees are not.
I would be happy to delve more deeply into this if you would like. I have a lot of EAB expertise and would love to expand on the topic.
Regards,

David N. Kusnierz
Sales Arborist
Autumn-SavATree & SavaLawn
P: (847) 912-5764
E: dkusnierz@savatree.com<mailto:dkusnierz@savatree.com>

From: Dan Gombac [mailto:dgombac@darienil.gov]
Sent: Wednesday, November 14, 2012 9:09 AM
To: David Kusnierz
Subject: RE: EAB Injections.

Hi Dave

Thanks for the follow up. The Council has requested opinions as to whether the trees should all be removed or treated? Please provide me your professional opiion.

Thanks

Daniel Gombac
Director of Municipal Services
630-353-8106
To receive important information from the City of Darien sign up for our electronic newsletter:
DARIEN DIRECT CONNECT
Follow the link below and subscribing is simple! http://www.darien.il.us/Departments/Administration/CityNews.html

From: David Kusnierz [mailto:dkusnierz@savatree.com]
Sent: Wednesday, November 14, 2012 8:41 AM
To: Dan Gombac
Subject: EAB Injections.

Dan. I sent you a preliminary bid for the EAB work.
In August you said the board would meet on this topic in Late October.
Any word on the situation?
Regards,

David N. Kusnierz
Sales Arborist
Autumn-SavATree & SavaLawn
P: (847) 912-5764
E: dkusnierz@savat <mailto:dkusnierz@savatree.com>

A	B	C	D	E	F	G	H	I	J	K
2	**Inventory**	**Total No of Trees**	**No of Ash Trees**	**Difference (Other Tree Species)**	**Percentage of Ash Trees to Total Trees**	**Total Tree Diameter Inches (DBH) (Average is 20 inch DBH)**	**Tree-Age Chemical-Application Rate 48.2 Milliliters Per Inch**	**Cost Per Liter**	**Arbor Plugs - 9 Per Tree**	**Plug Costs**
3							5.40	$ 494.00		$ 0.45
4	Section No 1	1594	20	1574	1.25%	400.00	2,160.00	$ 1,067.04	$ 180.00	$ 81.00
5	Section No 2	1869	631	1238	33.76%	12,620.00	68,148.00	$ 33,665.11	$ 5,679.00	$ 2,555.55
6	Section No 3	1577	507	1070	32.15%	10,140.00	54,756.00	$ 27,049.46	$ 4,563.00	$ 2,053.35
7	Section No 4	1994	659	1335	33.05%	13,180.00	71,172.00	$ 35,158.97	$ 5,931.00	$ 2,668.95
8	Section No 5	1922	796	1126	41.42%	15,920.00	85,968.00	$ 42,468.19	$ 7,164.00	$ 3,223.80
9	**Totals**	**8956**	**2613**	**6343**	**29.18%**	**52,260.00**	**282,204.00**	**$ 139,408.78**	**$ 23,517.00**	**$ 10,582.65**
10	Liters Required						**282.20**			
11	**Equipment Costs**	**Quantity**	**Unit Cost**	**Total Cost**						
12	Arborjet Hydraulic Kit	1	$ 2,900.00	$ 2,900.00						
13	Secondary Air Pack	1	$ 255.00	$ 255.00						
14	Arborjet Viper Needle (2 Pack)	1	$ 28.45	$ 28.45						
15	Clean-Jet Cleaner	12	$ 7.92	$ 95.04						
16	**Total Equipment Cost**			**$ 3,278.49**						
17	**Workforce Summary**	**No of Trees**	**Hours Per Tree**	**Total Hours Required**	**No of Working Weeks Required**	**No of Working Days Required**				
18	City Arborist	2613	0.5	1306.5	32.6625	163.31				
19	**Labor-Temp**	**No of Temp Help**	**Total Hours Required**	**Rate of Pay**	**Unit**	**Total Cost**				
20	Temporary Helper	1	1306.5	20	Hourly	26,130.00				
21	**Proposed In House program**									
22	**Cost Summary for 2013-2019**	**Cycle 1-Year 1 2013**	**Cycle 2 - Year 3 2015**	**Cycle 3 - Year 5 2017**	**Total Program Cost**	**YEAR 2019**				
23	Insecticide	$ 139,408.78	$ 139,408.78	$ 139,408.78	$ 418,226.33	**TO BE DETERMINED**				
24	Plugs	10582.65	$ 10,582.65	$ 10,582.65	$ 31,747.95					
25	Equipment	$ 3,278.49	$ -	$ -	$ 3,278.49					
26	Labor-Temporary Help	$ 26,130.00	$ 26,130.00	$ 26,130.00	$ 78,390.00					
27	Cost	$ 179,399.92	$ 176,121.43	$ 176,121.43	$ 531,642.77					
28	**Cost benefit of Ash Trees**	**No of Trees**	**Cost Benefit Per Tree**	**Total Cost Benefit**						
29	*See Supporting Documentation*	**2,613.00**	**$ 185.00**	**$ 483,405.00**						

30	B	C	D	E	F	G	H	I	J	K
31	**Removal Costs**	**No of Ash Trees**	**Total Tree Diameter Inches (DBH) (Average is 20 inch DBH)**	**Removal Cost**	**Stump Grinding Cost**	**Restoration Cost**	**Replacement Cost 4-inch Calliper**	**Total Replacement Cost**	**5 Year Replacement Cost Cost per Year**	
32				$ 30.00	$ 90.00	$ 50.00	$ 350.00			
33	Section No 1	20	400.00	$ 12,000.00	$ 1,800.00	$ 1,000.00	$ 7,000.00	$ 21,800.00	$ 4,360.00	
34	Section No 2	631	12,620.00	$ 378,600.00	$ 56,790.00	$ 31,550.00	$ 220,850.00	$ 687,790.00	$ 137,558.00	
35	Section No 3	507	10,140.00	$ 304,200.00	$ 45,630.00	$ 25,350.00	$ 177,450.00	$ 552,630.00	$ 110,526.00	
36	Section No 4	659	13,180.00	$ 395,400.00	$ 59,310.00	$ 32,950.00	$ 230,650.00	$ 718,310.00	$ 143,662.00	
37	Section No 5	796	15,920.00	$ 477,600.00	$ 71,640.00	$ 39,800.00	$ 278,600.00	$ 867,640.00	$ 173,528.00	
38	**Totals**	**2613**	**52260**	**$ 1,567,800.00**	**$ 235,170.00**	**$ 130,650.00**	**$ 914,550.00**	**$ 2,848,170.00**	**$ 569,634.00**	
39	**OUTSOURCED COSTS**									
40	**Inventory**	**No of Ash Trees**	**Total Tree Diameter Inches (DBH) (Average is 20 inch DBH)**	**Treatment Cost**	**Cycle One 2013 Cost**	**Cycle Two 2015 Cost**	**Cycle Three 2017 Cost**	**Total Program Cost**		
41				$ 7.00		$ 5.50	$ 5.50			
42	Section No 1	20	400	$ 2,800.00	$ 2,800.00	$ 2,800.00	$ 2,800.00			
43	Section No 2	631	12,620	$ 88,340.00	$ 88,340.00	$ 88,340.00	$ 88,340.00			
44	Section No 3	507	10,140	$ 70,980.00	$ 70,980.00	$ 70,980.00	$ 70,980.00			
45	Section No 4	659	13,180	$ 92,260.00	$ 92,260.00	$ 92,260.00	$ 92,260.00			
46	Section No 5	796	15,920	$ 111,440.00	$ 111,440.00	$ 111,440.00	$ 111,440.00			
47	**Totals**	**2613**	**52260**		**$ 365,820.00**	**$ 365,820.00**	**$ 365,820.00**	**$ 1,097,460.00**		

MINUTES
CITY OF DARIEN
MUNICIPAL SERVICES COMMITTEE
October 22, 2012

PRESENT: Joseph Marchese – Chairperson, Alderman Halil Avci, Alderman Ted Schauer, Dan Gombac - Director, Michael Griffith – Senior Planner, Elizabeth Lahey-Secretary

ABSENT: None.

OTHERS: Jim Kelly, Darien

ESTABLISH QUORUM

Chairperson Marchese called the meeting to order at 6:30 p.m. at the City Hall – City Council Chambers, Darien, Illinois and declared a quorum present,

NEW BUSINESS

A. Ordinance – Petitioner seeks a variation to reduce the required setback from a side lot line from 5 feet to zero feet for a detached accessory structure.

Mr. Michael Griffith – Senior Planner presented the staff report. He reported that the petitioner is seeking a variation to reduce the required setback from a side lot line for a detached accessory structure which was built without a permit. He reported that this request brings the situation into compliance.

Mr. Griffith reported that the PZC held a public hearing and recommended approval.

Alderman Avci questioned the shed behind the fence.

Mr. Griffith reported that there are two sheds but the one in question is on the east. He reported that the shed behind the fence is older.

There was no one in the audience wishing to present public comment.

Alderman Schauer made a motion and it was seconded by Alderman Avci that based upon the submitted petition and the information presented, that the request associated with PZC 2012-13 is in conformance with the standards of the Darien City Code and move that the Municipal Services Committee recommend approval of the petition.

Upon voice vote, THE MOTION CARRIED unanimously 3-0.

B. Discussion – Proposed adoption of updated editions model building codes.

Mr. Dan Gombac – Director provided a recap of the current codes and highlighted the changes noted on page three of the agenda memo.

Alderman Schauer questioned if fire suppression would be deleted.

Mr. Gombac stated that fire suppression would be included and is being revised. He reported that the Fire Districts are very proactive with regard to fire suppression. He further reported that the Illinois State Fire Marshal is also proactive.

Mr. Gombac reported that the Tri-State Fire Protection District is looking for more stringent codes due to concern regarding State funding that may be effected.

Alderman Avci stated that if the Fire District is looking at it only from a financial perspective what is the cost to residents? He questioned what will happen if Darien chooses to not move forward with fire suppression and any legal ramifications.

Mr. Gombac stated that he would analyze all of the information and concerns and invite the fire department representatives. The cost and ongoing maintenance will have an effect on residents and builders if the code included fire suppression for single family residents. Staff will also be scheduling a follow up meeting regarding the funding and level of stringency. Staff followed up with the City Attorney regarding liability and there was no liability to the City for not adopting fire suppression for single family residential.

Alderman Avci questioned the Illinois Energy Code.

Mr. Gombac and the City's consultant reported that the Illinois Energy Code provides for homes to be more energy efficient and the City had adopted the code.

Mr. Gombac informed the Committee that this item will be presented at the next meeting as a final draft.

There was no one in the audience wishing to present public comment.

C. Resolution – Accepting a proposal from Rag's Electric in an amount not to exceed $28,200.00 for the Electrical Maintenance Housekeeping at Plant 3-1930 Manning Road, Plant 4-1897 Manning Road and Plant 5-8700 Black of Lemont Road.

Mr. Dan Gombac, Director reported that the resolution is to perform electrical maintenance work. The clean-up included the removal of electrical equipment that is no longer used or required due to the conversion of Lake Michigan water years ago. The equipment served well equipment, softening and chemical injecting. The goal is to bring the plants into code compliance.

Mr. Gombac reported that one quote was received from the seven vendors who were contacted. He reported that staff reached out to all the vendors as to why they did not submit and the responses were; too busy, not interested and forgot. Mr. Gombac stated that he had contacted Cattaneo Electric Company and requested of them to submit a quote as we had only received one. A quote was submitted on October 8th after the due date of October 4th and was $3,950 less than the responsive quote. He reported that since staff had only received one quote that staff reached out to Rag's Electric to review their quote to match the non-responsive quote.

Alderman Avci stated that he had met with Sharon Cattaneo, from Cattaneo Electric, at a recent function regarding the quote process. Alderman Avci, inquired of Mr. Gombac how the process started with Cattaneo Electric prior to the formal quote request. Mr. Gombac stated that Staff met with a representative of Cattaneo Electric in October, of 2011 to review the scope of work and prepare a budgetary quote. The budgetary quote was in the amount of $25,000 and was reflected in the FYE13 Budget. Mr. Gombac stated that staff always seeks budgetary quotes from vendors for equipment materials and services. Staff had requested formal quotes and the results were as stated.

Alderman Avci stated that maybe staff should have gone to both and asked for a final bid.

Mr. Gombac stated that both proposals can be rejected and the City can go out for a new quote.

Chairperson Marchese inquired to the process and the negotiation with Rag's Electric. Mr. Gombac replied that since Rag's Electric was the responsive quote and the only quote, staff discussed the situation with the City Administrator and then contacted Rag's after Cattaneo responded with a lower quote. The thought process was since Rag's was responsive that they be afforded an opportunity to review their pricing and match the non-responsive quote.

Alderman Schauer questioned if there would be any legal repercussion.

Mr. Gombac stated that he did not believe there would be any legal issues because staff was not going with Cattaneo. The proposals state that the City has to right to reject or change quantities.

Mr. Jim Kelly, Darien resident was in the audience. He suggested that staff take a look at possibly splitting the work between the two vendors. Mr. Gombac stated that there were three locations and each location had unique pricing and components. The jobs could not be split-up fairly.

Chairperson Marchese stated that regardless, the bids exceed the budgeted amount. He suggested rejecting both proposals and ask for new bids based on the $25,000 budget.

Alderman Avci made a motion and it was seconded by Alderman Schauer to reject both proposals for the Electrical Maintenance Housekeeping at Plant 3-1930 Manning Road, Plant 4-1897 Manning Road and Plant 5-8700 Black of Lemont Road based on the bids being over the $25,000 budget.

Upon voice vote, THE MOTION CARRIED unanimously 3-0.
There was no one in the audience wishing to present public comment.

D. Resolution – To enter into a contract agreement with Homer Tree Care, Inc. in an amount not to exceed $94,000.00 for the City's Tree Trimming and Removal Program.

Mr. Dan Gombac – Director reported that staff reached out to Steve Piper and Sons regarding the first year extension. He reported that the owner informed staff that they were not interested in the extension.

Mr. Gombac reported that staff reviewed the bid tally and that Homer Tree Care, Inc. was the next responsive bidder. He stated that Homer Tree Care, Inc. requested to review the bid and honor the pricing as proposed by Steve Piper and Sons for the 2012/13 program and upon negotiations, Homer Tree Care Inc. agreed to honor the pricing with the exception to the hourly rate for Emergency Tree Removal.

Alderman Schauer stated that he liked the pricing. He questioned if this included taking down the trees and that more may be needed next year.

Mr. Gombac stated that the contract includes taking down the trees.

There was no one in the audience wishing to present public comment.

Alderman Schauer made a motion and it was seconded by Alderman Avci to approve A RESOLUTION TO AUTHORIZE THE MAYOR AND CITY CLERK TO ENTER INTO A CONTRACT AGREEMENT FOR THE TREE TRIMMING AND REMOVAL PROGRAM BETWEEN THE CITY OF DARIEN AND HOMER TREE CARE, INC. IN AN AMOUNT NOT TO EXCEED $94,000.00 FOR PARKWAY TREE MAINTENANCE TRIMMING AND AUTHORIZING THE PROPOSED UNIT PRICING FOR TREE REMOVAL AND STUMP GRINDING.

Upon voice vote, THE MOTION CARRIED unanimously 3-0.

E. Resolution – Accepting a proposal from All Star Maintenance Incorporated to provide snow plowing and deicing services for the parking lot and walkways at the Darien Heritage Center and the sidewalk plowing and deicing services at the Municipal Complex as per the unit prices.

Mr. Dan Gombac, Director reported that the proposal includes limited snow removal and deicing operations for the Heritage Plaza and the City Hall complex. He reported that Public Works will still maintain the snow plowing and salting for the City Hall parking lot. He further reported that the proposal includes Heritage Center and that reimbursement is in place but limited due to vacancies.

There was no one in the audience wishing to present public comment.

Alderman Avci made a motion and it was seconded by Alderman Schauer to approve A RESOLUTION ACCEPTING A PROPOSAL FROM ALL STAR MAINTENANCE INCORPORATED TO PROVIDE SNOW PLOWING AND DEICING SERVICES FOR THE PARKING LOT AND WALKWAYS AT THE DARIEN HERITAGE CENTER AND THE SIDEWALK PLOWING AND DEICING SERVICES AT THE MUNICIPAL COMPLEX AT THE PROPOSED SCHEDULE OF PRICES THROUGH APRIL 30, 2013.

Upon voice vote, THE MOTION CARRIED unanimously 3-0.

F. Minutes

Alderman Schauer made a motion and it was seconded by Alderman Avci to approve the September 24, 2012 Municipal Services Committee Meeting Minutes.

Upon voice vote, THE MOTION CARRIED unanimously 3-0.

DIRECTOR'S REPORT

Mr. Dan Gombac provided an update on the 75th Street construction. He reported the October deadline will not be met.

Mr. Gombac reported that the grant application for Bailey and Plainfield Roads did not make the list. He reported that the City did receive notification that a grant with the Village of Woodridge was awarded. The project is a joint venture with Woodridge for the resurfacing of 83rd Street, from Lemont Road to Woodward Ave. Details will follow as presented. He further reported that the City is awaiting a response regarding the landscaping enhancement grant in conjunction with the proposed 75th Street Construction..

NEXT MEETING

Chairperson Marchese announced that the next meeting is scheduled for Monday, November 26, 2012 at 6:30 p.m.

ADJOURNMENT

With no further business before the Committee, Alderman Avci made a motion and it was seconded by Alderman Schauer to adjourn. Upon voice vote, THE MOTION CARRIED unanimously and the meeting adjourned at 7:40 p.m.

RESPECTFULLY SUBMITTED:

Elizabeth Lahey **Secretary**	**Joseph Marchese** **Chairman**
Halil Avci **Alderman**	**Ted Schauer** **Alderman**

- Director's Report
Nov 26.

CHRISTOPHER B. BURKE ENGINEERING, LTD.
9575 West Higgins Road Suite 600 Rosemont, Illinois 60018 TEL (847) 823-0500 FAX(847) 823-0520

October 23, 2012

Darien Fire Department
7550 Lyman Avenue
Darien, Illinois 60561

Attention: Robert Morris, Director Fire Prevention Bureau

Subject: Prescribed Burn for Ecological Management at Tara Hill Subdivision Wetlands, Darien DuPage County, Illinois
(CBBEL Project No.11-189)
(IEPA Open Burning Permit ID No. 031276)

Dear Chief Dato

Christopher B. Burke Engineering Ltd. (CBBEL) has been contracted by City of Darien to conduct a controlled burn of natural vegetation during the Fall between November and December 2012 at the above referenced site (see attached map). **Specifically we will be burning the north wetland located north of Donegal Dr.** Enclosed is a copy of the IEPA Open Burning Permit, and a neighbor notification letter with aerial, and a location map.

CBBEL has conducted burns for over 120 projects since 1997. A portion of those projects have been burned multiple times culminating in over 200 completed controlled burns ranging in size from 1-80 acres. CBBEL staff certifications include: the Chicago Wilderness Midwest Ecological Prescription Burn Crew Member Training, U.S. Forest Service National Wildfire Coordinating Group S-130/190 and S-290 Firefighter Training, Basic First Aid, and CPR training. Notably, in 2001, CBBEL staff prepared the Midwest Ecological Prescription Burn Crew Member Training Manual used to train local Forest Preserve District staff and volunteer stewards for the Chicago Wilderness Region.

CBBEL has conducted burns in various habitats including wetlands, prairies and woodlands in urban and rural areas. CBBEL burn crews understand how to properly define conditions for burning, the need to secure the perimeter of the site with a burn break, and maintain control of the burn at all times. Typically strip burns are used after the perimeter has been secured with a blackline, to reduce smoke generated and overall visual intensity of the burn. CBBEL staff have also completed burns with difficult conditions including changing wind speeds, wind direction changes and close proximity to homes.

CBBEL's fire suppression equipment combined include: 100 and 200 gallon truck mounted water tanks, backpack sprayers, flappers and all necessary hand tools including five gallon Indian brand metal fire pump cans, fire rakes, shovels, brush cutters and chainsaws, road signs and drip torches required to complete the burn safely and successfully. CBBEL burn personnel

wear wildland firefighting jackets and pants in accordance with NFPA 1977 standards, helmets with face shields, carry two-way radios for on-site communication and cell phones for emergency use. CBBEL evaluates each site and will bring appropriate equipment to conduct the burn.

CBBEL will conduct the burn at a time when appropriate wind speed, direction, temperature and humidity are present. All affected businesses and residences are being notified in advance of the proposed burn per the IEPA permit requirement. We anticipate having a burn crew of 3 or 4 on site during the burn.

CBBEL will contact the fire department the day of the proposed burn at (630) 910-2204 and at the main number (630) 910-2200 and give them the name and phone number for the burn boss on site for the day.

Please let us know if any other entities in addition to the number listed above need to be called on the day of the burn.

Please call if you have any questions.

Sincerely,

Robert Sliwinski
Burn Director
847-823-0500 Office
847-514-0150 Cell

Enclosures: IEPA Permit, Location Map, Neighbor Notification Letter with Aerial

CC: Dan Gombac, City of Darien

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19506, SPRINGFIELD, ILLINOIS 62794-9506 - (217) 782-2113

PAT QUINN, GOVERNOR JOHN J. KIM, INTERIM DIRECTOR

217/782-2113

OPEN BURNING PERMIT

RECEIVED
OCT 15 2012
CHRISTOPHER B. BURKE ENGINEERING LTD.

PERMITTEE

Christopher B. Burke Engineering, Ltd.
Attn: Robert Sliwinski
9575 West Higgens Road Suite 600
Rosemont, Illinois 60018

Application Number: B1207055 I.D. Number: 031276
Date Issued: October 11, 2012 Date Received: July 23, 2012
Date Open Burning May Begin: One Day from Date Issued
Date Open Burning Must Cease: One Year from Date Issued
Open Burning of: Prairie/Woodland/Wetland for Ecological Management
Location: Tara Hill Wetlands northeast of Intersection of Donegal Drive and Roberts Road, Downers Grove
County: DuPage

Permit is hereby granted to open burn the above-referenced material, subject to the standard conditions attached hereto and the following special conditions:

1. Issuance of this permit shall not exempt this open burning from applicable local restrictions.

2. Section 9(a) of the Environmental Protection Act is applicable to open burning, i.e., persons affected by such open burning may lodge complaints with the Environmental Protection Agency if the burning is injurious to human, plant, or animal life, to health, or to property, or unreasonably interferes with the enjoyment of life or property.

3. Burning shall take place only when wind is blowing away from roadways, residences, railroad tracks and populated areas.

4. Prior to each scheduled burn the Permittee shall notify residences and businesses that may be affected, of the intended open burning activity.

5. The Permittee shall notify and receive prior approval from the local fire protection district at least 24 hours prior to the actual burn.

6. Open burning is prohibited on "Orange AQI or Worse" or "Air Pollution" alert days. Information regarding alert status may be obtained by calling:

For Cook County - 312-744-4365
For Lake, McHenry, Kane, DuPage and Will Counties - 708-865-6320
For Monroe, St. Clair, and Madison Counties - 314-645-5505
between May - September

Or

Check http://www.epa.state.il.us/air/aqi/index.html for the AQI website.

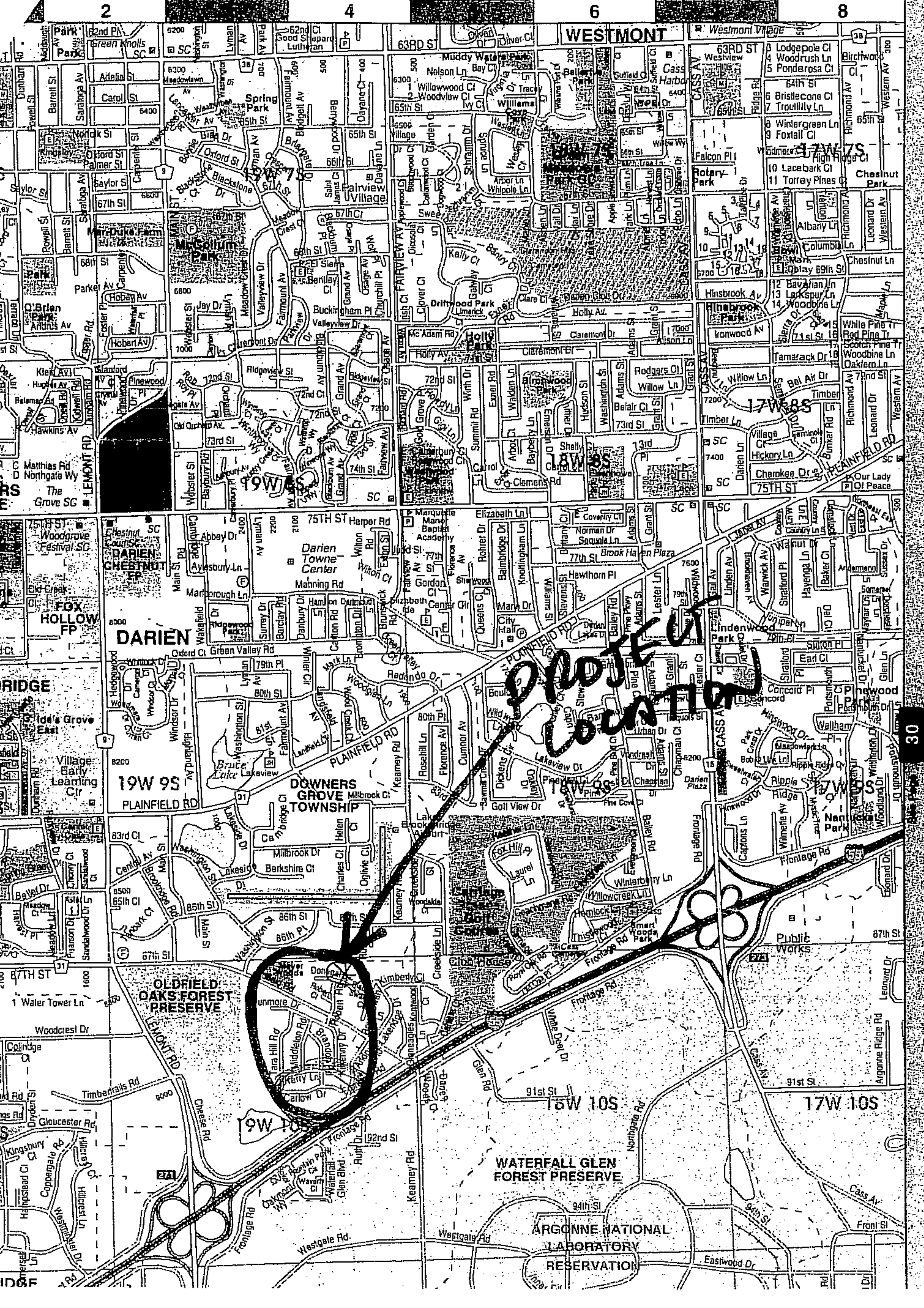
If you have any questions on this permit, please call Floyd McKinney at the above number.

Edwin C. Bakowski, P.E.
Manager, Permit Section
Division of Air Pollution Control

Date Signed: 10/1/12

ECB:FEM:NAD:jws

cc: Region 1


2
4
6
8
WESTMONT
DARIEN
DOWNERS GROVE TOWNSHIP
Darien Towne Center
McCollum Park
Fairview Village
Holly Park
Ironwood Park
Hinsbrook Park
Lindenwood Park
Pinewood Park
Nantucket Park
Rotary Park
Chestnut Park
Marquette Manor Baptist Academy
City Hall
Woodgrove Festival SC
DARIEN CHESTNUT FP
FOX HOLLOW FP
Bruce Lake
Village Early Learning Ctr
OLDFIELD OAKS FOREST PRESERVE
WATERFALL GLEN FOREST PRESERVE
ARGONNE NATIONAL LABORATORY RESERVATION
Public Works
Club House
19W 7S
18W 7S
17W 7S
19W 8S
18W 8S
17W 8S
19W 9S
18W 9S
17W 9S
19W 10S
18W 10S
17W 10S
75TH ST
87TH ST
63RD ST
PLAINFIELD RD
LEMONT RD
CASS AV
FAIRVIEW AV
91st St
94th St
Westgate Rd
Frontage Rd
PROJECT LOCATION
30

"NEIGHBOR NOTIFICATION"

NOTICE OF INTENT TO CONDUCT A CONTROLLED BURN

Please be aware that Christopher B. Burke Engineering, Ltd., (CBBEL) intends to conduct a controlled burn as part of wetland management at:

Tara Hill Wetland Areas

Where: North of I-55, West of Carriage Green Golf Course, South of Plainfield Road, Darien, DuPage County, Illinois.

Who: Christopher B. Burke Engineering, Ltd.
9575 West Higgins Road
Rosemont, IL 60018
TEL (847) 823-0500
FAX (847) 318-9793

What: Controlled burn of natural vegetation of one of three wetlands (N of Donegal Drive)

When: FALL: November-December 2012
Or SPRING March -April 2013
(Completion of the burn is anticipated to take 1day and scheduling is dependent on site and weather conditions)

Why: The City of Darien is maintaining the natural areas of this site with plant communities native to the region. Controlled burning is an important tool for restoring native plant communities in the Midwest. Fire inhibits the growth of low quality, invasive weeds while it stimulates the growth of quality native plants. Although the burned areas may appear unsightly for a short time following the burn, vegetation will return quickly in the spring. CBBEL is conducting this controlled burn as part of natural area management for the City.

If you have any health problems that may be exacerbated by smoke that may potentially be generated during a controlled burn; and/or you would like us to notify you the day before the burn, please fill out and detach the form below and mail (or fax the whole form) within one week of receipt.

CUT HERE TO MAIL IN or FAX ENTIRE FORM

Neighbor of: Tara Hill Wetland (00-572) (2012) (Please Print Clearly)

Name: _____ **(REQUIRED)**

Address: _____ **(REQUIRED)**

_____

Phone: _____ **(REQUIRED)**

____ Please notify me the day before the burn.
____ I have a specific medical condition that may be exacerbated by a burn. Please call me.

Mail or Fax to: Christopher B. Burke Engineering, Ltd., 9575 W. Higgins Rd., Suite 600
Rosemont, Illinois 60018 Attn: Robert Sliwinski FAX –847-318-9793

December 12, 2012

To: Municipal Services Committee

From: Daniel Gombac

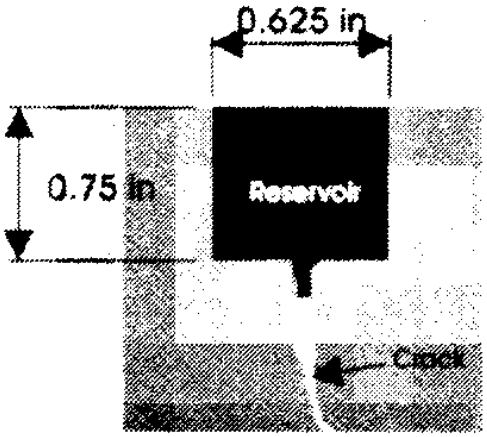
Ref: Crack Seal Program Cost Effectiveness and Benefit

The following memorandum is in reference to the Crack Seal Program. Within the context of the memorandum, staff would like to take the opportunity and further expound on the program.

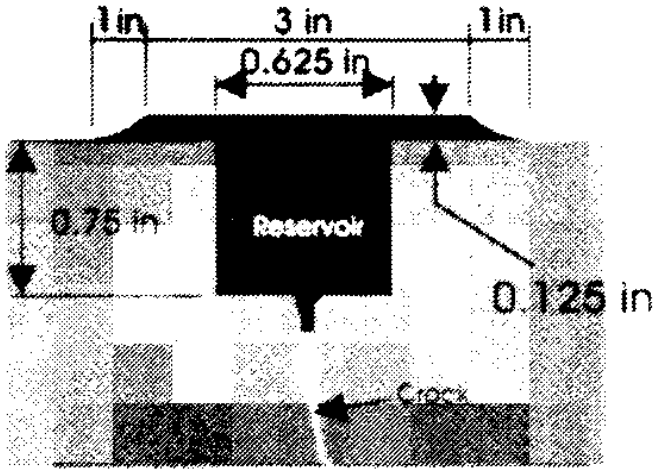
As we are all aware the roads endure enormous stress and strain within our climate. Vehicle tires continually push and pull at paved surfaces. The faster or heavier the vehicle, the more the pavement is compressed and then tensioned. Temperature changes, even those within a 24-hour day, expand and contract the pavement surface. Traffic and temperature create small surface cracks. Water seeps through the cracks to the base materials and weakens the roadway and additional cracks form and become wider if not repaired. The result is that if these conditions are left untreated the roads will deteriorate much faster than treated roads.

Crack sealing is an inexpensive routine maintenance treatment that will significantly delay roadway deterioration. The sealing material is required to be applied into the cracks before they become too large and before the freeze-thaw cycles have an opportunity to shift the pavement and once again

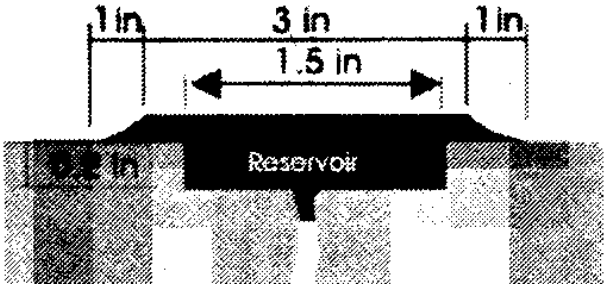
SHRP H-106 Crack Sealing Configurations



Configuration A
Standard Reservoir-and-Flush



Configuration B
Standard Recessed Band-Aid



develop larger cracks (alligatoring). Flexible rubberized asphalt sealants bond to crack walls and move with the pavement, preventing water from entering the road base. The life of the road is extended and maintenance costs greatly reduced over time.

The sealing process must be completed with proper equipment and materials for the program to be successful. Prior to the sealant being applied the cracks should be routed. The routering provides the crack to be widened to a width of approximately three quarters of an inch, by approximately three quarters of an inch deep. This method allows for a reservoir of the sealant in the pavement, and when the pavement expands, the reservoir holds enough sealant to stretch with the road. If the widening of the cracks was not completed the narrow cracks will expand further than the sealant material can stretch and water will seep into the crack and sooner than later into the base. After the routering is completed all dirt, debris and, if any, water must be removed from the cracks. The method of removal is completed by utilizing a blow pipe which blows compressed air from a pull behind conventional air compressor. The sealant is heated through a pull behind kettle and poured into the cracks with pails that have special spouts for the end result. The end result for the sealant is referred to as a band aid effect, which further produces an applied sealant width of approximately three inches in width by an eighth of an inch above the rods surface (see attached diagram). Once the hot sealant is applied a thin layer of silica sand is strewn over the sealant and open to traffic in approximately ten to fifteen minutes.

The sealants used today include polymer-modified liquid asphalt, rubberized asphalt, and low-modulus rubberized asphalt. Polymer-modified liquid asphalt is a mixture of natural and synthetic compounds with liquid asphalt. Rubberized asphalt and low-modulus rubberized asphalt are made by adding rubber to asphalt for flexibility. The choice of material depends on the type and amount of rubber in the mixture. Costs for these materials are competitive to one another.

The City Crack Sealing Program has been in place since 2006 and the program included the vast majority of the roads that were paved since 2002. The program calls out for crack sealing to be completed every 3 years, for 3 cycles. The question becomes has the City benefited from the program and how is it measured. For a further analysis, staff has reviewed 79th Street from Cass Ave to Sawyer Rd. The roadway was resurfaced in 2002 and the first round of crack fill was completed in 2007 with a second round completed in 2010 with limited quantities and this year 8000 pounds of material was used. Please keep in mind that 79th Street is a collector street and receives a significant amount of wear and tear. Limited road base repairs were also recently completed as preventative maintenance. If the crack fill program was not utilized the roadway would be requiring resurfacing and significant base repair by 2013/2014. The roadway is currently scheduled to be re-surfaced in 2016/2017. The approximate total cost to crack fill the roadway has been $4,200 per year since the initial application. The cost to resurface 79th Street today would be approximately $219,000.

Through the program the City is extending the life of the road by two to three years and protecting the road base. It is estimated that a savings has already been realized due to sealing the cracks and thereby preventing base damage. It is estimated that the savings to date is valued at approximately $25,000 or a net savings of $16,600.

The next example cites Summit Road which was resurfaced in 2006, and required 3000 pounds for the second cycle of the 2012 Crack fill program. The roadway has minimal alligatoring with no patching necessary and has reached the midlife of the pavement. The typical life expectancy of the pavement is currently averaging 12 years with no preventative maintenance, pending traffic patterns. Through the preventive crack fill maintenance program, the roadway will not require resurfacing for an additional two to three years. The average annual cost to crack seal Summit Road has been $1,500. The cost to resurface Summit Road is approximately $95,000.

Please recall 69th Street was resurfaced in 2011 and previously in 1999. The roadway never received any preventative maintenance treatment and the Department received many complaints on its condition. The Department spent many days on repair and funds on patching because of the extreme amount of potholes.

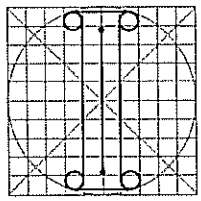
In conclusion, Crack Sealing reduces deterioration of lightly damaged roads by minimizing the affects of traffic, weather, and temperature changes. Crack sealing is most cost effective when applied to longitudinal and transverse cracks. If the surface has severe fatigue, (alligator cracks) the road base is failing and crack sealing is seldom cost effective. Staff would like to mention that occasionally a snow plow, especially with a new snow blade will occasionally tear the top one-eighth (band-aid) of the sealant, which could allow the penetration of water.

The cost savings in respect to the Crack Sealing is a variable, due to weather and traffic patterns. In other words, a non-collector street may not require extensive crack sealing as in comparison to a collector street and thereby reducing future maintenance costs extending the life of the non-collector street up to three years.

In addition to saving road maintenance dollars, crack sealing extends the life of a road at an average of three years, and saves money for motorists. It provides a smoother, safer road and reduces vehicle repairs.

Attached, please find a report prepared by Arudi Rajagopal, Ph.D, on Effectiveness of Crack Sealing on Pavement Serviceability and Life. The report was prepared in cooperation with The Ohio Department of Transportation and the U.S. Department of Transportation Federal Highway Administration.

Should you have any further questions regarding this subject matter, please feel free to contact me at your convenience.



INFRAME

INFRASTRUCTURE MANAGEMENT AND ENGINEERING

EFFECTIVENESS OF CRACK SEALING ON PAVEMENT SERVICEABILITY AND LIFE

FINAL REPORT

Arudi Rajagopal, Ph.D.
INFRAME, 2300 East Kemper Road, Suite A-17
Cincinnati, OH 45241-6501

State Job No. 134364
Jnne 2011

Prepared in cooperation with
The Ohio Department of Transportation and
The U.S. Department of Transportation Federal Highway Administration

1. Report No. **FHWA/OH-2010/14**	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and subtitle **Effectiveness of Crack Sealing on Pavement Serviceability and Life**		5. Report Date **June 2011** 6. Performing Organization Code
7. Author(s) **Dr. Arudi Rajagopal**		8. Performing Organization Report No. 10. Work Unit No. (TRAIS)
9. Performing Organization Name and Address **Infrastructure Management & Engineering, Inc.** **2300 East Kemper Road, Suite A-17** **Cincinnati OH 45241-6501**		11. Contract or Grant No. **134364** 13. Type of Report and Period Covered
12. Sponsoring Agency Name and Address **Ohio Department of Transportation, 1980, West Broad Street** **Columbus, OH 43223**		14. Sponsoring Agency Code
15. Supplementary Notes		

16. Abstract:

This report presents the details of a study to evaluate effectiveness of Ohio Department of Transportation's prevailing crack sealing program. Evaluation was performed through field monitoring a large number of crack sealed and control sections. Field monitoring included collection of performance data for over five year period after crack sealing. The data collected was used to address the following specific issues:

- Do existing crack sealing practices within ODOT enhance pavement performance?
- What is the optimum timing of the treatment?
- Does crack sealing extend pavement life?
- Is crack sealing a cost effective treatment?

The analysis revel that crack sealed pavements, in general, performed better than the control sections on a 5-year cycle. Regardless of pavement type, aggregate type used in the surface layer, and the prior pavement condition crack sealing always results in performance gain. Maximum performance gain can be achieved by treating pavements with Pavement Condition Rating ranging from 66 to 80. The performance prediction models indicate crack sealing treatment can extend the service life of pavements by up to 3.6 years. The cost analysis using a common metric such as the Net Present Value illustrates that crack sealing, as a maintenance strategy, is economically viable for pavements in the prior PCR range of 66-70. From a practical point of view, it is hereby recommended that ODOT develops a policy to allow crack sealing as a strategy for pavement preventive maintenance for all pavements in the prior PCR range of 66 to 80.

17. Key Words	18. Distribution Statement
Crack Sealing, Pavement Performance, Pavement Serviceability, Life, Cost-effectiveness, Performance-effectiveness	**No restrictions. This document is available to the public through the National Technical Information Service, Springfield, Virginia 22161**

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
Unclassified	**Unclassified**	81	

Disclaimer

The contents of this report reflect the views of the authors who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the Ohio Department of Transportation or the Federal Highway Administration. This report does not constitute a standard, specification or regulation.

ACKNOWLEDGMENTS

The investigators wish to convey their appreciation to Mr. Roger Green, Mr. Aric Morse, Mr. Adam Au, Mr. Patrick Bierl and Mr. David Humphrey of the Ohio Department of Transportation for their help throughout the life of this project. Thanks are also due to Mr. Andrew Williams, Mr. Brian Schleppi, Mr. Thad Tibbles and Mr. Dave Powers for their valuable contributions. The cooperation extended by the district and county officials is duly acknowledged. Support rendered by Dr. C. Keshav, Mr. Mahesh Bhupalam and Mr. Vikram Kirikera in data processing and review of the report is highly appreciated.

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EFFECTIVENESS OF CRACK SEALING ON PAVEMENT SERVICEABILITY AND LIFE

1. DESCRIPTION OF THE PROBLEM

Sealing cracks in pavements with an asphalt surface is a preventive maintenance activity performed by most highway agencies including the Ohio Department of Transportation (ODOT). A range of materials and methods are in use within Ohio for this purpose. The type and severity of cracks sealed, the extent of crack sealing on a given pavement and choice of a specific material/method depends on the county manager's understanding of the historical performance of various materials, pavement type (flexible or composite), regional conditions, and availability of operating funds. Figure 1 shows crack sealing operation while Figures 2 through 4 show typical crack sealed pavements to illustrate various types of cracks and the extent of cracks sealed.

Cleaning cracks with compressed air | Placing hot sealant with a squeeze (wand) | Finished Seal

Figure 1. Crack Sealing Operation

A successful crack sealing job can result in many benefits including substantial life cycle cost savings, improved customer service, and better system-wide performance. However, crack sealing may also have adverse effects on the pavement in many ways such as, tracking of sealing

material by tire action, reduced skid resistance, and a rougher pavement. Crack sealing is deemed beneficial if pavement life is increased while maintaining safety and serviceability.

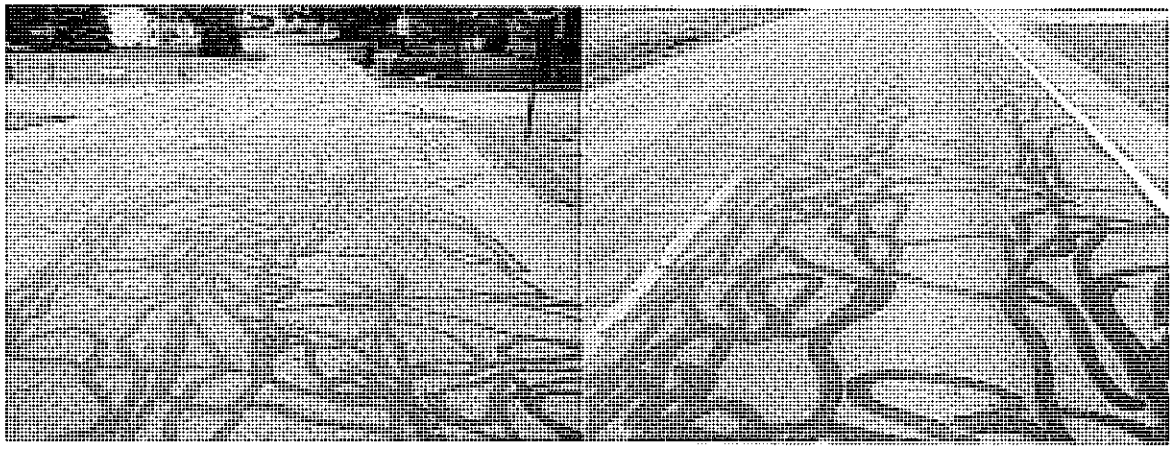


Figure 2. Extensive Crack Sealing in Flexible Pavements

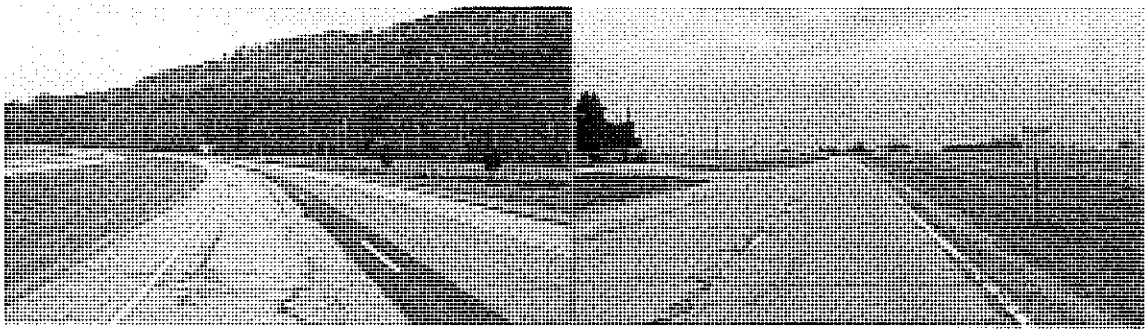


Figure 3. Sealing High Severity Cracks

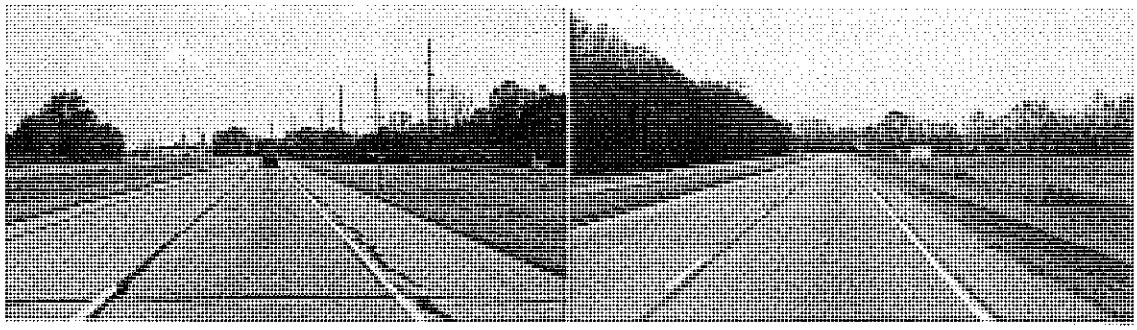


Figure 4. Sealing Reflection Cracks in Composite Pavements

In March 2000, ODOT developed a project in association with the University of Cincinnati (UC) to 'design a project to statistically verify the effectiveness of ODOT's current crack sealing program on pavement condition and life'. The primary intent of the study was to investigate and document the effectiveness of crack sealing with respect to: (i) economic benefits, (ii) maintaining and/or improving serviceability, and (iii) extending pavement life. During the period 2000 through 2002, the UC researchers worked with ODOT engineers, district highway managers and county managers to initiate this project. The study led to setting up of over 700 test sections (each 1000' long), conducting preliminary pavement condition evaluations, and establishment of guidelines for further monitoring. A report for Phase 1 study [1] was submitted to ODOT describing the details of the work performed and guidelines for future monitoring.

Following the Phase 1 study, ODOT continued to monitor the performance of the experimental sections for an additional eight years. In the meantime, in 2008, ODOT initiated Phase 2 study. The purpose of Phase 2 study was to review the data being collected and to develop a methodology to comprehensively process and analyze the long-term performance monitoring data. The present report describes the details of the efforts performed during the Phase 2 study and includes a description of the data collection procedures, analysis procedure, results derived, performance and cost benefits of ODOT's prevailing crack sealing program, conclusions, recommendations, and guidelines for implementation of specification changes. In order to provide continuity from Phase 1, this report includes excerpts from Phase-1 report such as, a brief description of the experimental plan, testing and evaluation. The Phase-1 report presents a review of literature and the same is not repeated in this report.

2. OBJECTIVES AND SCOPE

The primary focus of this research is to evaluate the effectiveness of crack sealing procedures currently practiced in Ohio. The study does not concentrate on crack sealant material type and application methods, but rather on the effectiveness of sealing in general on overall pavement performance. This research included setting up test and control sections, and conducting pavement condition evaluations for the long term monitoring of these sections. The data collected was used to address the following specific issues:

- Do existing crack sealing practices within ODOT enhance pavement performance?
- If so, what is the optimum timing for treatment?
- Does crack sealing extend pavement life?
- Does crack sealing provide cost benefit? If so, to what extent?

3. REVIEW OF EXISTING CRACK SEALING PRACTICES IN OHIO

The study began with a survey of ODOT's county managers and district officials. A survey form was mailed to all eighty-eight county managers and twelve district highway managers to query them on the materials used for crack sealing, application methods, type of cracks sealed, time of sealing, and their willingness to participate in a study to evaluate the effectiveness of crack sealing program. Forty six county managers responded to the survey. By summarizing the survey forms, the following observations were made:

- The counties perform crack sealing during the Fall, Winter and Spring months;
- Compressed air is commonly used for crack preparation;
- The pavement temperature when the seal is applied normally varies from 40^0F to 100^0F;
- The counties 'mostly clean' the pavement surface and keep the surface 'dry' before placing

the crack seal;

- The counties treat cracks of all severity (low, moderate and high). However, a greater number of counties treat only 'moderate' cracks;
- The types of cracks sealed include alligator, edge, block, longitudinal, reflection, and transverse cracks;
- A range of materials are used for crack sealing. MC-3000 stands out as the most widely used material;
- Routing is not done prior to crack sealing;
- The finished sealant is predominantly 'level with surface' or 'overband';
- The counties perform crack sealing using their own forces. The counties rarely outsource this work to contractors;
- The county managers who responded to the survey were willing to participate in this study to systematically evaluate the effectiveness of crack sealing practice.

This information was used to develop a plan for the field experiment and to define the exact scope of the field study namely, the number of test variables to be included, total number of test sections required, and the availability of sections.

4. DESIGN OF EXPERIMENT

Following the review of crack sealing practices in Ohio, discussions were held with the technical evaluation team. Several tasks, as mentioned below, to assist in the design and development of the experiment were finalized:

- Identification of experimental variables,
- Compiling a list of crack seal projects,

- Setting up layout of test sections,
- Crack treatment of test sections,
- Conducting field evaluations,
- Determining sample size required,
- Defining a measure of effectiveness,
- Determining type and frequency of data to be collected,
- Developing a database,
- Developing guidelines for monitoring.

4.1 Identification of Experimental Variables

Based on a review of variables that are known to affect the pavement performance in general, and the field variables that may have historically influenced the performance of Ohio's crack sealed pavements in particular, the following three variables, designated as primary factors, were included in the field experiment:

- Pavement type (flexible and composite),
- Type of aggregate in the surface layer (gravel and limestone), and
- Pavement Condition Rating, PCR (<75, 75-85, >85)

A schematic of the experimental variables is presented in Figure 5. The primary variables are the factors which exercise considerable influence on the outcome; they are actually selected for study in the experiment. A matrix of design factors used in the experiment is shown in Table 1. A group number was assigned to each set of factors as illustrated in the table.

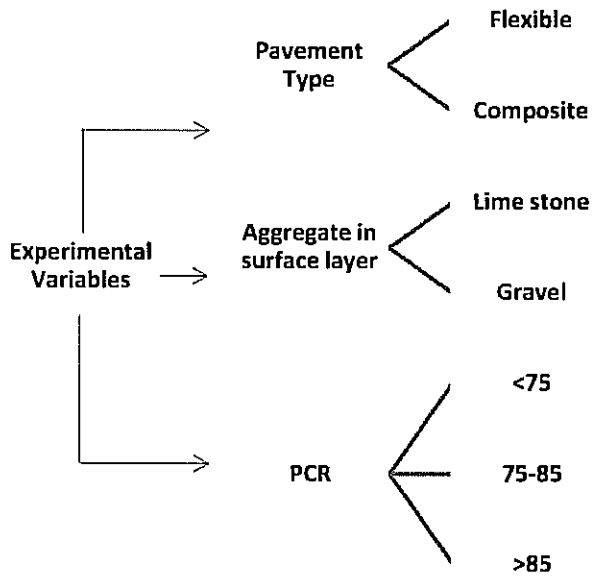


Figure 5. Experimental Variables

Table 1. Matrix of Test Sections

Pavement type	**Flexible**						**Composite**					
Aggregate in surface layer	Lime Stone			Gravel			Lime Stone			Gravel		
PCR of existing pavement	<75	75-85	>85	<75	75-85	>85	<75	75-85	>85	<75	75-85	>85
Group number	1	2	3	4	5	6	7	8	9	10	11	12

4.2 Compiling a list of Crack Seal Projects

In late 2000, the researchers, along with ODOT's Pavement Engineering personnel, met with several district and county managers at their premises. These meetings were convened to provide the officials information regarding the scope of the research and the type and extent of cooperation required from them. It was generally agreed to consider only flexible and composite pavements that the counties have included in their annual crack sealing program. The districts

were asked to provide details of pavement sections included in their crack sealing program, as noted in Table 2.

Table 2. Data Requested from ODOT Districts

List of pavement sections included in the annual crack seal program for Fiscal Year 2000 and 2001							
County	Route	Begin Log	End Log	Year of next resurfacing	Composite /Flexible	Aggregate in surface layer	Pavement Condition Rating

A comprehensive list of pavement sections intended for crack sealing in the year 2000 and 2001was prepared using the information provided by participating district offices and counties.

4.3 Preliminary Selection of Test Sections

The researchers, often accompanied by ODOT personnel, visited the pavement sections, the details of which was obtained from the districts, and drove over the entire length of each crack sealing project. From these projects, one mile long candidate test sections were selected for the field experiment using the following criteria:

- Pavement type: Should be either flexible or composite
- Pavement structure: The thickness and the layer configuration should be similar
- Pavement Condition: The pavement section should be fairly homogeneous, in terms of surface condition, between two mile markers, and
- Year of next resurfacing: The pavement section under consideration should not be included in the resurfacing program for at least five more years.

Additional information for each section namely, current PCR, aggregate type in the surface course, functional classification, geometric details, and climate was collected from the available records. The group number which each pavement section belongs to was identified, and was assigned a number 1 through 12 as defined in Table 1. This completed the preliminary selection of the test sections. The sections were well scattered over the state comprising of 57 counties.

4.4Setting up Layout of Test Sections

A typical layout of a test section is shown in Figure 6. As can be seen, each test section is 1-mile long. Each test section was divided into five subsections. In the first year, only subsection-1 received a crack seal treatment. Then, subsections 2, 3 and 4 received same crack seal treatments in years 2, 3, and 4 respectively. Subsection 5 was left unsealed and served as control (do-nothing) subsection. This procedure was adopted so as to study the effect of deferring crack sealing on pavement condition and life, and at the same time to generate information regarding the optimum timing of crack seal treatment.

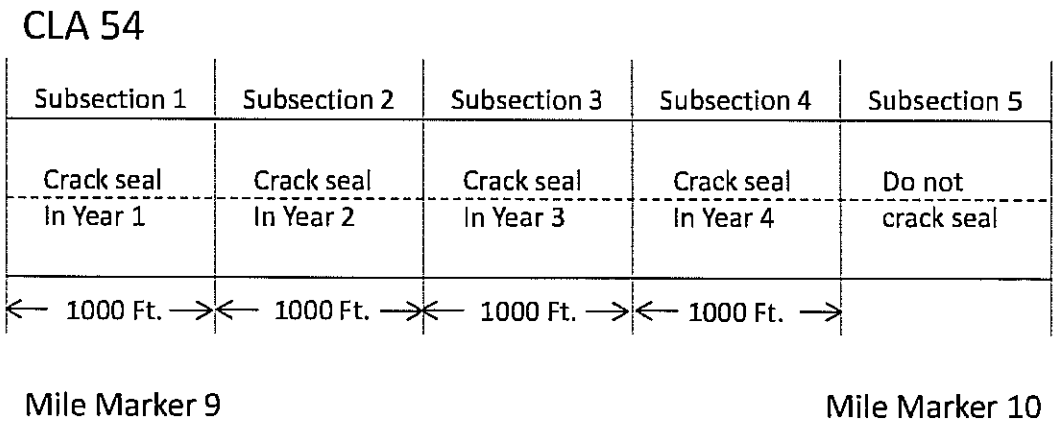


Figure 6. Layout of Test Sections

After selecting the test sections, the researchers made paint markings on the pavement to designate subsections and sequence of crack sealing. Letters were sent to respective counties with an attachment which showed the exact location of the test sections, and provided details about the field experiment. The counties were asked to crack seal only one subsection each year.

Often, on each route, two sections with similar conditions were selected. On 2-lane highways the gap between the two sections was varied from zero to five miles, depending on site specific conditions. On 4-lane highways, the two sections are either on parallel lanes or in the same direction as on 2-lane highways. Figure 7 shows the general location of test sections on 2 and 4 lane highways.

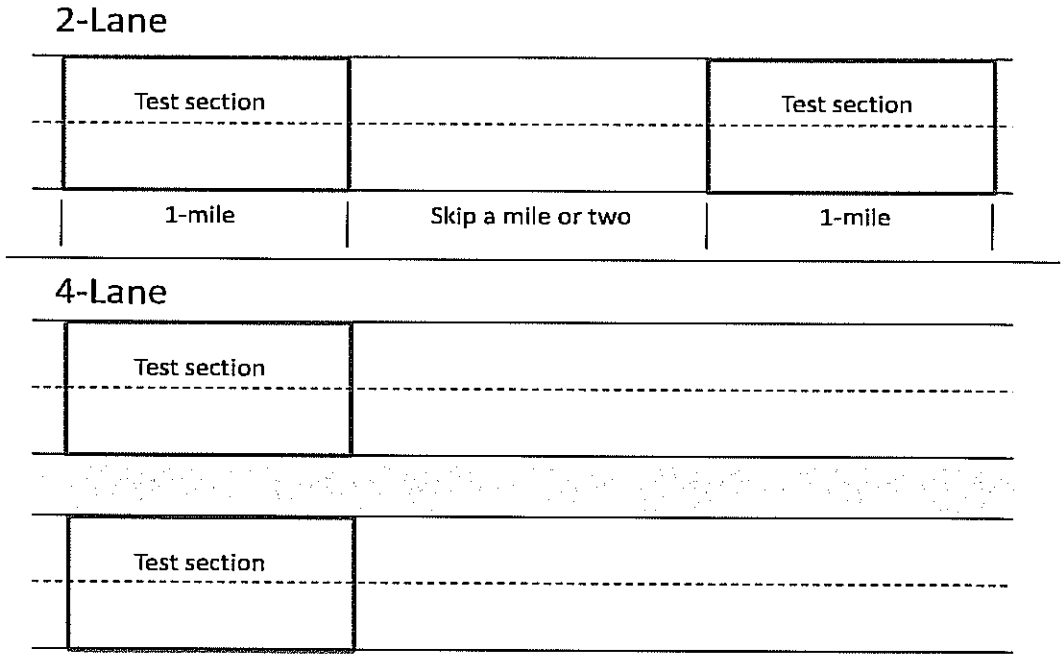


Figure 7. Location of Test Sections on 2-Lane and 4-Lane Highways

4.5 Crack Treatment of Test Sections

Since this research focused on evaluating the effectiveness of existing crack sealing practices, the researchers asked the county managers to use their usual practice to seal the cracks in the test sections, with respect to timing of the treatment, types of cracks sealed, materials used, and placement procedures. The counties were asked to keep proper documentation of the issues relating to construction, materials used, placement techniques, environmental conditions at the time of crack sealing, time required for each operation, type and quantity of material used, and cost of the operation.

4.6 Conducting Field Evaluations

Field investigation included collecting PCR data for each subsection. Because of the subjectivity in PCR data collection, the researchers met with the Pavement Management personnel and calibrated their data collection procedure. In the first year, the researchers collected PCR data on most of the sections. However, for future data collection, ODOT dedicated one technician for this project. This technician collected PCR data on all the test sections selected for this study. Using one rater for the entire period of research eliminated any errors that may arise due to differences in the observations made by different raters.

PCR data was collected on all test sections prior to crack sealing. In each subsection, photographs of typical cracks at three locations were taken for visual comparison of pavement condition.

During meetings with county managers, it was learned in most cases that, after crack sealing a pavement section, the counties do not perform any maintenance or rehabilitation activities during the following five years. Because of this practice, this study proposed the

performance of the crack treated subsections be monitored for up to five years, after sealing. Hence the data collection effort continued for a period of five years after sealing the cracks in the last subsection. Since subsection-4 was treated in year 4, field monitoring was made for a total of nine years.

4.7 Interactive Database

An interactive database was developed to assist ODOT in (i) data gathering, (ii) data storing, (iii) data processing, and (iv) data analysis. This database termed ODOT - ECS (Ohio Department of Transportation - Database to Evaluate Crack Sealing Practices in Ohio) is a comprehensive MS Windows based software developed in MS Visual Basic and MS Access. Figure 8 shows an overview of ODOT-ECS. The software offered friendly screens to enter data and to generate reports. Input to the system included three basic modules namely (i) section description, (ii) crack seal data, and (iii) PCR data. Figures 9, 10 and 11 show the screen layout for each of these modules.

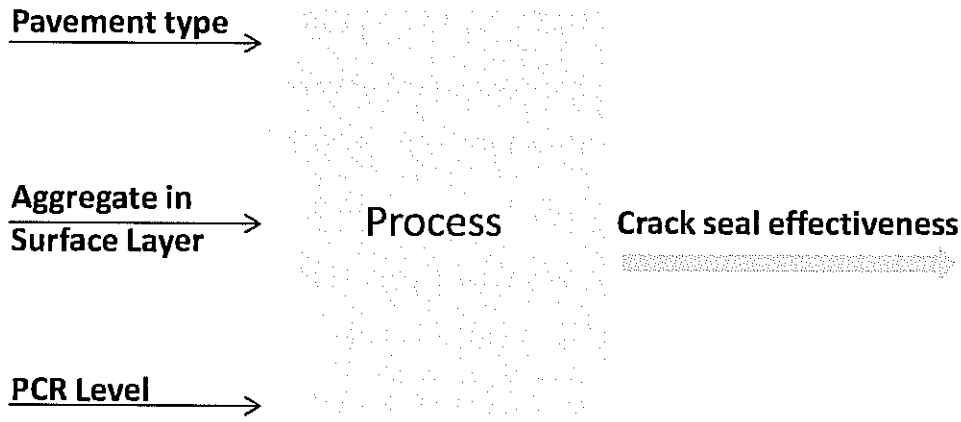


Figure 8. Schematic Illustration of Process Model

The location of the test section, geometric data, traffic count, pavement composition and climate are all entered in the section description module. County name, route, mile marker from and to, and subsection numbers were used to generate a unique section ID. Crack seal information like the date of crack seal, temperature at the time of placing the seal, type of material used, quantity of material and cost was entered in the crack seal data module. This screen also displayed the PCR for each year. PCR data entered for each year, for each test section, was stored in the database.

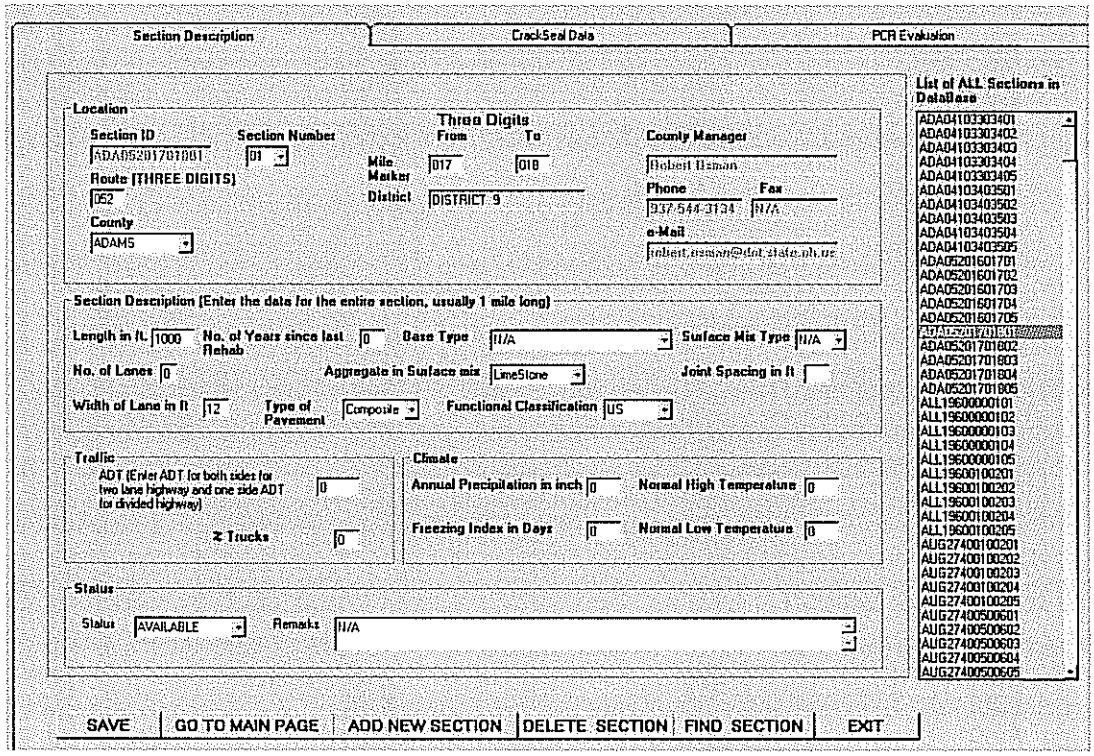


Figure 9. Section Description Module

Based on ODOT's requirements, many reports were generated to do the following:

- Query reports with respect to a field variable,
- Generate matrix of test sections, and
- Generate helpful reports to track:
    - Progress
    - Problems
    - Delays in crack treatment and/or sending information sheet
    - Counties to contact

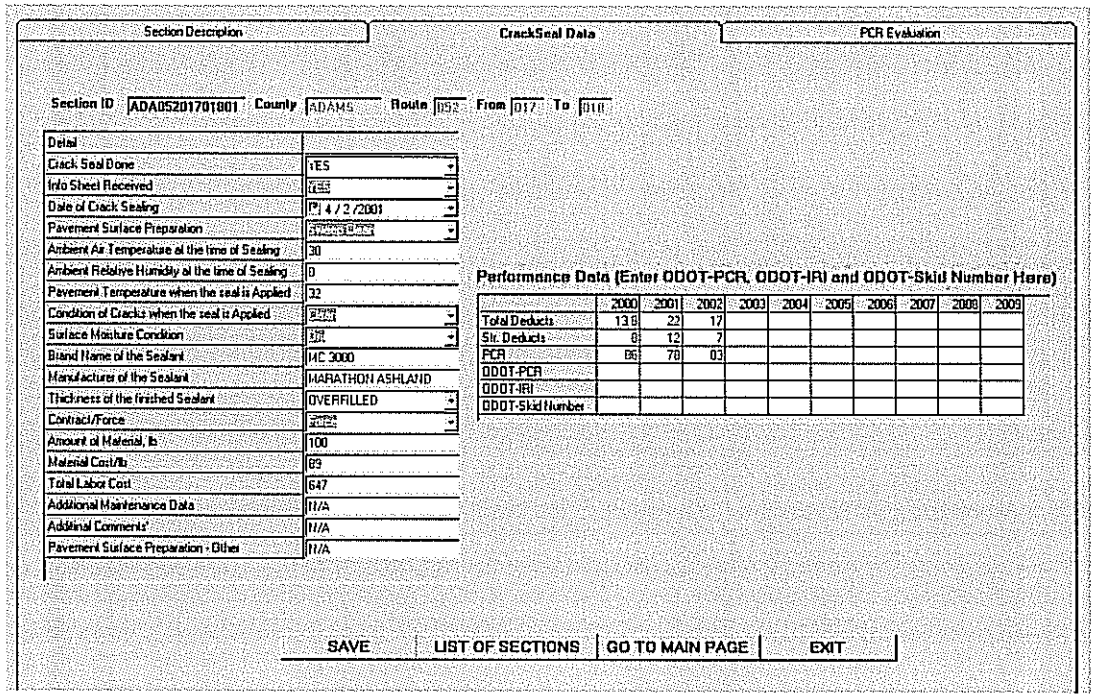


Figure 10. Crack Seal Data Entry Module

The reports were designed to help ODOT stay organized throughout the research period and to ensure the timely and proper collection of the required data. The participating counties had a critical role to play in this research. They were instructed to crack seal only the appropriate 1000 foot long section each year. Communication and coordination between the counties and the research team was extremely important to the success of this project. Despite this, there were occasions where some county forces unknowingly crack sealed the entire test section or more than one subsection in a given year. The reports generated by the software helped ODOT document such cases, keep track of progress and potential problems, and assist in organizing the research.

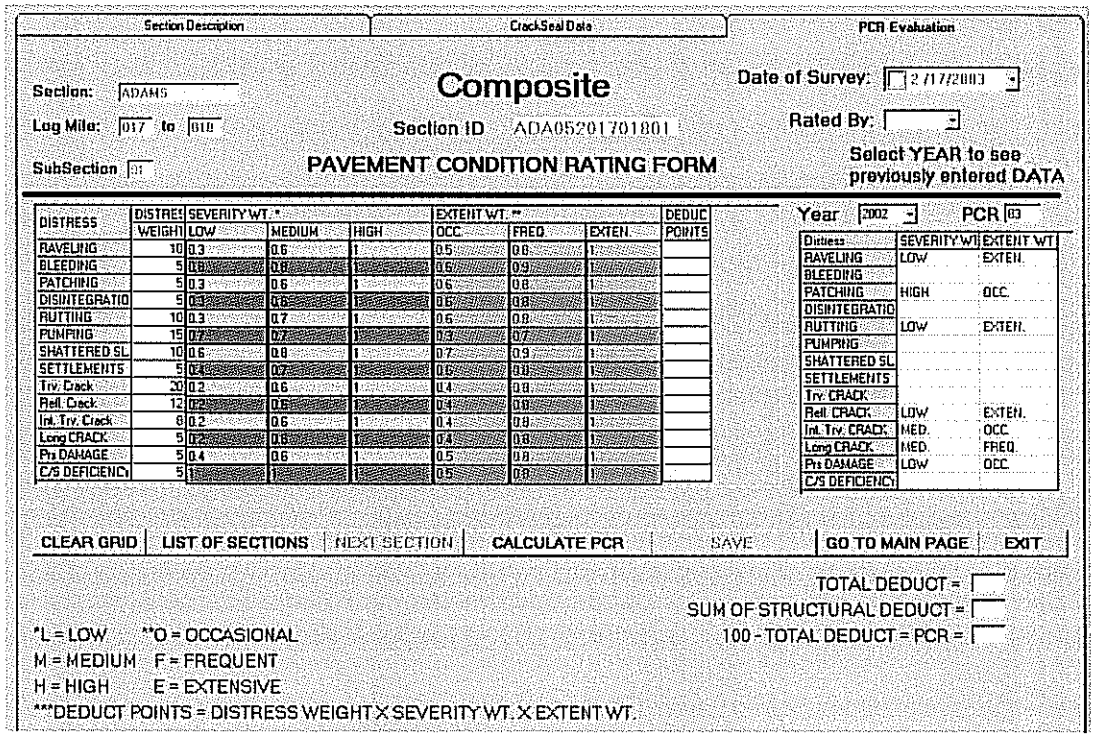


Figure 11. PCR Data Entry Module

5. OVERVIEW OF ANALYSIS APPROACH

Crack sealing is a pavement preventive maintenance treatment. Investigation of effectiveness of crack sealing on pavement performance is a classic example of determining the effectiveness of pavement maintenance treatments on future performance of pavements. When used appropriately, this treatment may have the ability to improve the pavement performance, prolong the remaining service life and result in cost-effective pavement maintenance and management procedure. While investigating if crack sealing is an effective preventive maintenance treatment, the two important questions which need to be addressed are: ***where*** and ***when***. ***Where*** refers to a set of physical conditions and ***when*** relates to a time at which crack seal treatment should be performed. In the present study, ***where*** is defined by the two experimental variables namely, pavement type and type of aggregate used in the surface layer, while ***when*** is described by the PCR value of the pavement at the time of treatment. The analysis focused on identifying the set of conditions and optimal timing of treatment that would maximize the performance of pavements.

6. MEASURE OF EFFECTIVENESS

An important step in the evaluation of the effectiveness of crack sealing is to define the 'measure of effectiveness', a score describing the performance of pavements. In the present study, the following two measures of effectiveness were used:

- Average performance gain, and
- Service life extension.

6.1 Average Performance Gain

Figure 12 illustrates the method adopted for deriving average performance gain. A test section in Fairfield County on state route 22 between mile markers 19 and 20 has been used for this illustration. The figure shows two performance curves – one for a crack sealed subsection and the other for the control section. The crack seal treatment was placed when the PCR of the in-service pavement was 88. As a result of the treatment, the PCR of the pavement increased to 91. The PCR values of the treated pavement were higher than that of control section during the subsequent years. The performance gain for each year was calculated as the difference in PCR between the treated and control subsections, see Table 3.

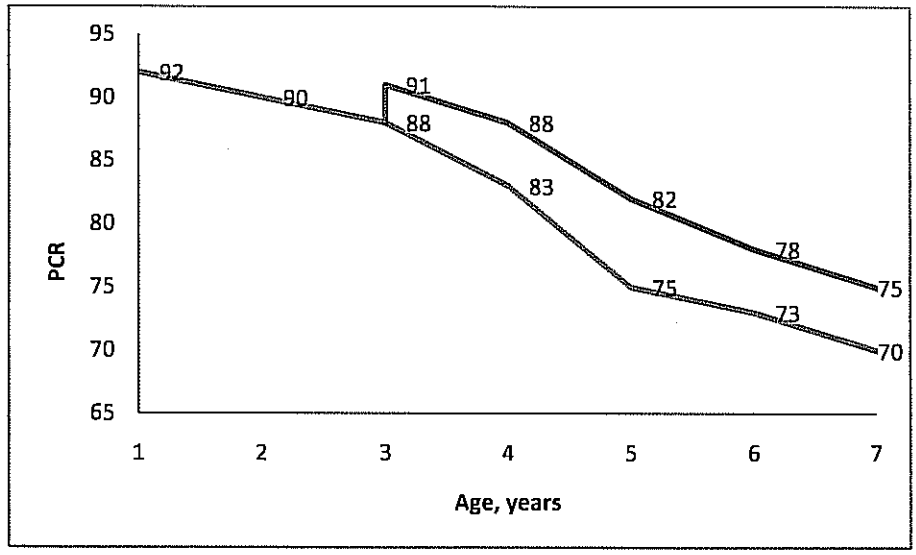


Figure 12. Deriving Average Performance Gain

Table 3. Calculating Average Performance Gain

Age, years	PCR of treated pavement	PCR of control section	PCR difference
1	91	88	3
2	88	83	5
3	82	75	7
4	78	73	5
5	75	70	5
		Average performance gain:	5

As can be seen in the figure and table, the performance gain varied with time. Average performance gain was calculated as the average of PCR difference for five years.

6.2 Service Life Extension

The data from this study was used to verify whether crack sealing extends the service life. In order to do this, performance curves were developed for crack sealed and control pavements. As a precursor to the analysis, the subsections were placed into several groups based on prior PCR such as 45-50, 51-55, 56-60, and so on. These PCR values indicate the condition of the subsections just before the crack seal treatment. Performance prediction models were developed for each group of treated subsections with PCR as a function of age. The linear models provided the best fit in most cases. Based on the discussions with ODOT engineers, service life calculations were made for threshold PCR values corresponding to 60 and 65. The number of years required to reach a threshold PCR value of 60 and 65 was read from the graph and was reported as the life of the treated pavements.

Figure 13 shows a sample of the performance prediction model and service life extension calculation for prior PCR group 66-70.

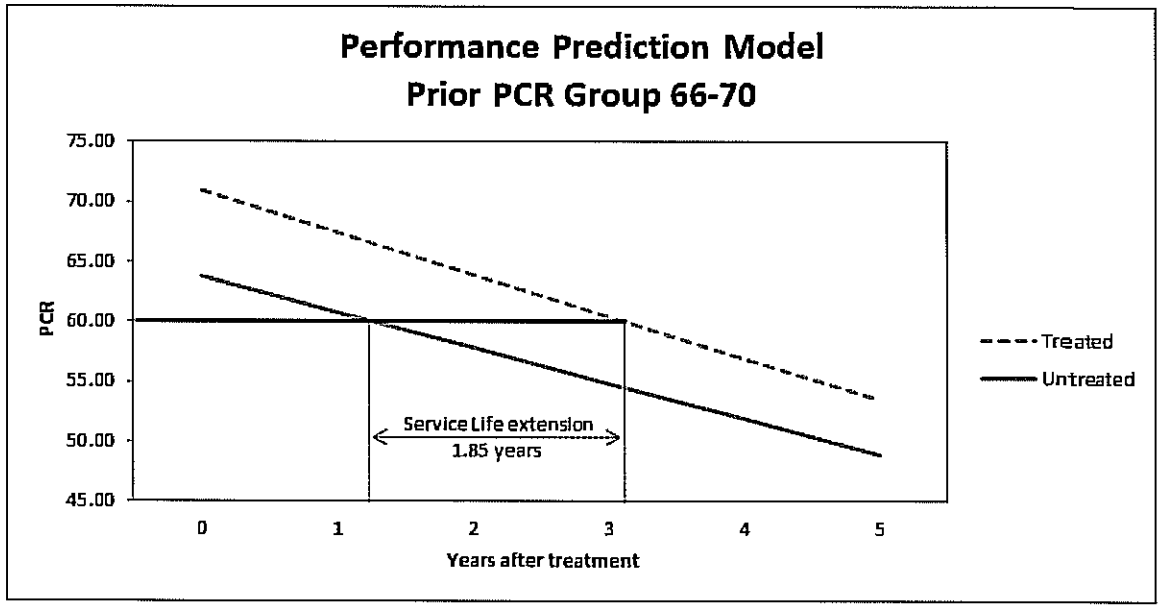


Figure 13. Performance Prediction Model Showing Service Life Extension Calculation

7. DATA ORGANIZATION

For each of the mile long test section selected for field monitoring, the following information was collected:

- Location: county, route, mile markers
- Geometrics and pavement data: number of lanes, width of lane, joint spacing (in case of composite pavement), pavement type, type of aggregate in surface layer
- Traffic: ADT, % truck, functional classification (IR, US, SR)

Following this, each test section was divided into five subsections and an 11-digit identification number was assigned to each subsection as shown in Figure 14.

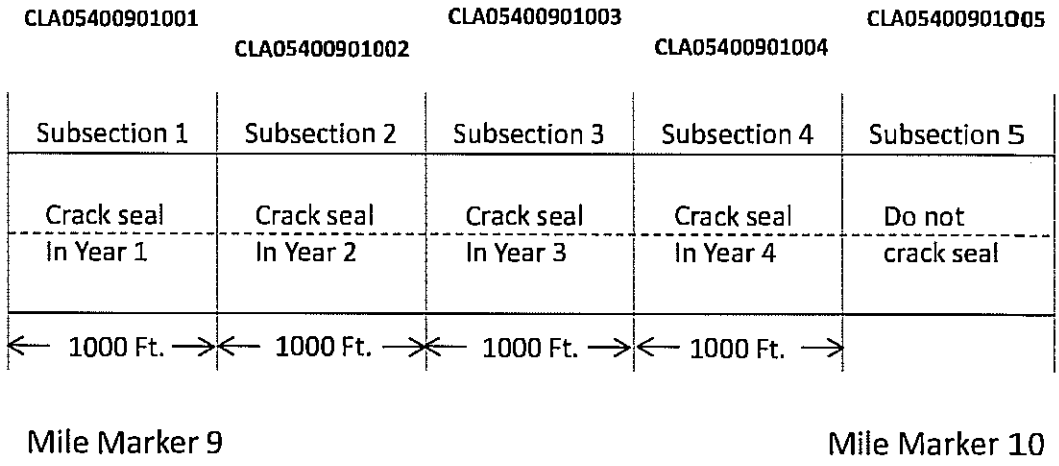


Figure 14. Identification Numbers for Subsections

The ID comprised of name of the county (3 digits), route number (3 digits), begin mile marker (3 digits), end mile marker (3 digits), and subsection number (2 digits).PCR data was collected for all subsections, prior to crack sealing and designated as 'prior PCR'. The PCR of each subsection within a mile was identical with little variation. This PCR data, along with the individual distress data that make up PCR was entered and stored in ODOT ECS. Crack seal treatment was performed on subsection-1 in 2001. PCR data was collected again on all subsections in 2001 and stored in the database. This step was continued until subsection-4 was treated. After this period, PCR data collection was continued on all subsections for 5-years. Table 4 shows an example of PCR data stored for the FAI 22 section.

Table 4. Typical PCR Data for a Test Section

PCR Data collection for each test subsection on FAI 22						
Year	Date of crack seal	FAI02201902001	FAI02201902002	FAI02201902003	FAI02201902004	FAIO2201902005
2000	12/30/2000	88	88	85	86	87
2001	8/23/2001	91	82	84	82	83
2002	5/24/2002	88	87	80	80	82
2003	6/5/2003	82	82	81	74	75
2004	5/27/2004	78	78	79	75	73
2005	3/21/2005	75	74	72	70	70
2006	5/30/2006	74	71	71	68	68
2007	6/22/2007	74	67	69	65	66
2008						
Highlighted values indicate PCR after crack sealing						

Crack seal deficiency is one of the distresses surveyed and it carries a 5 point weight. A crack sealed pavement would gain 5 points according to the survey procedure employed by ODOT. The first PCR survey after crack sealing was designated as PCR after crack seal. The first survey was conducted within a few weeks to several months after crack seal operation. Subsection 1 in the table above shows 3-PCR point gain due to crack treatment while subsection 2 shows 5 point gain. Subsections 3 and 4 indicate only one PCR point gain. This can be attributed to the time period between crack seal and the survey.

For data processing, a master database was created including all subsections, their performance data and primary variables. An extract of the database is shown in Figure 15.

Additionally, the individual distress data and other data such as geometrics, traffic was stored in other tables.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	SectionId	Year	Date of Data Collection	PCR	Date of Crack Seal		Date of Crack Seal 1 for 551	Age		Date of Crack Seal 2 for 552	Age		Date of Crack Seal 3 for 553	Age		Date of Crack Seal 4 for 554	Age		Date of Crack Seal 5 for 555	Age	Pavement Type	Aggregate Mix type
2	ADAO4103303401	2000	8/1/2000	80	12/12/2000	90	12/12/2000	133													Flexible	LimeStone
3	ADAO4103303401	2001	5/22/2001	78	12/12/2000	78	12/12/2000														Flexible	LimeStone
4	ADAO4103303401	2002	4/16/2002	75	12/12/2000	75	12/12/2000														Flexible	LimeStone
5	ADAO4103303401	2003	2/27/2003	69	12/12/2000	69	12/12/2000														Flexible	LimeStone
6	ADAO4103303401	2004	3/26/2004	64	12/12/2000	64	12/12/2000														Flexible	LimeStone
7	ADAO4103303401	2005	4/19/2005	63	12/12/2000	63	12/12/2000														Flexible	LimeStone
8	ADAO4103303401	2006	4/20/2006	60	12/12/2000	60	12/12/2000														Flexible	LimeStone
9	ADAO4103303401	2007	3/8/2007	59	12/12/2000	59	12/12/2000														Flexible	LimeStone
10	ADAO4103303401	2008	7/31/2008	59	12/12/2000	59	12/12/2000														Flexible	LimeStone
11	ADAO4103303402	2000	8/1/2000	80	4/4/2002					80	4/4/2002	611									Flexible	LimeStone
12	ADAO4103303402	2001	5/22/2001	75	4/4/2002					75	4/4/2002	317									Flexible	LimeStone
13	ADAO4103303402	2002	4/16/2002	81	4/4/2002					81	4/4/2002										Flexible	LimeStone
14	ADAO4103303402	2003	2/27/2003	77	4/4/2002					77	4/4/2002										Flexible	LimeStone
15	ADAO4103303402	2004	3/26/2004	73	4/4/2002					73	4/4/2002										Flexible	LimeStone
16	ADAO4103303402	2005	4/19/2005	67	4/4/2002					67	4/4/2002										Flexible	LimeStone
17	ADAO4103303402	2006	4/20/2006	64	4/4/2002					64	4/4/2002										Flexible	LimeStone
18	ADAO4103303402	2007	3/8/2007	62	4/4/2002					62	4/4/2002										Flexible	LimeStone
19	ADAO4103303402	2008	7/31/2008	59	4/4/2002					59	4/4/2002										Flexible	LimeStone
20	ADAO4103303403	2000	8/1/2000	94	11/21/2002							54	11/21/2002	842							Flexible	LimeStone
21	ADAO4103303403	2001	5/22/2001	78	11/21/2002							78	11/21/2002	548							Flexible	LimeStone
22	ADAO4103303403	2002	4/16/2002	74	11/21/2002							74	11/21/2002	219							Flexible	LimeStone
23	ADAO4103303403	2003	2/27/2003	73	11/21/2002							73	11/21/2002								Flexible	LimeStone
24	ADAO4103303403	2004	3/26/2004	71	11/21/2002							71	11/21/2002								Flexible	LimeStone
25	ADAO4103303403	2005	4/19/2005	63	11/21/2002							63	11/21/2002								Flexible	LimeStone
26	ADAO4103303403	2006	4/20/2006	63	11/21/2002							63	11/21/2002								Flexible	LimeStone
27	ADAO4103303403	2007	3/8/2007	60	11/21/2002							60	11/21/2002								Flexible	LimeStone
28	ADAO4103303403	2008	7/31/2008	60	11/21/2002							60	11/21/2002								Flexible	LimeStone
29	ADAO4103303404	2000	8/1/2000	94	3/17/2004										94	3/17/2004	1324				Flexible	LimeStone
30	ADAO4103303404	2001	5/22/2001	77	3/17/2004										77	3/17/2004	1030				Flexible	LimeStone
31	ADAO4103303404	2002	4/16/2002	73	3/17/2004										73	3/17/2004	701				Flexible	LimeStone
32	ADAO4103303404	2003	2/27/2003	69	3/17/2004										69	3/17/2004	364				Flexible	LimeStone
33	ADAO4103303404	2004	3/26/2004	75	3/17/2004										75	3/17/2004					Flexible	LimeStone
34	ADAO4103303404	2005	4/19/2005	67	3/17/2004										67	3/17/2004					Flexible	LimeStone
35	ADAO4103303404	2006	4/20/2006	64	3/17/2004										64	3/17/2004					Flexible	LimeStone
36	ADAO4103303404	2007	3/8/2007	61	3/17/2004										61	3/17/2004					Flexible	LimeStone
37	ADAO4103303404	2008	7/31/2008	59	3/17/2004										59	3/17/2004					Flexible	LimeStone
38	ADAO4103303405	2000	8/1/2000	94	#N/A														94	#N/A	Flexible	LimeStone
39	ADAO4103303405	2001	5/22/2001	79	#N/A														79	#N/A	Flexible	LimeStone
40	ADAO4103303405	2002	4/16/2002	76	#N/A														76	#N/A	Flexible	LimeStone
41	ADAO4103303405	2003	2/27/2003	71	#N/A														71	#N/A	Flexible	LimeStone
42	ADAO4103303405	2004	3/26/2004	69	#N/A														69	#N/A	Flexible	LimeStone
43	ADAO4103303405	2005	4/19/2005	65	#N/A														65	#N/A	Flexible	LimeStone
44	ADAO4103303405	2006	4/20/2006	64	#N/A														64	#N/A	Flexible	LimeStone
45	ADAO4103303405	2007	3/8/2007	60	#N/A														60	#N/A	Flexible	LimeStone
46	ADAO4103303405	2008	7/31/2008	59	#N/A														59	#N/A	Flexible	LimeStone
47	ADAO4103403501	2000	8/1/2000	92	4/19/2001	92	4/19/2001	261													Flexible	LimeStone

Figure 15. Data Organization

8. VERIFICATION OF DATA INTEGRITY, COMPLETENESS AND VALIDATION OF CRACK SEAL DATABASE

Before proceeding with data processing, it was decided to do the following:

1. Thoroughly review the ODOT-ECS database
2. Identify missing data
3. Identify sources for locating missing data
4. Collect missing data and update the database
5. Visit 20% of test sections
6. Validate the ODOT-ECS database

The database organized all the data in several tables as below:

- Location details
- County
- Crack conditions
- Performance Data for each year from 2000 through 2008

A review of the database at the beginning of this study revealed that a significant number of records did not contain the date of crack seal. Also some errors were identified in the distress data for a few records. When a distress data is entered, the user has to record both severity and extent values. If either of them is missing, it can result in incorrect PCR value.

An additional computer program was written to scan every record in each table. The purpose of this software was to conduct a thorough review of the database so as to (i) ensure all required entries have been made, and (ii) verify correctness of the entries. The program was designed to systematically access each table and scan the entries. Primary focus was on:

- Date of crack seal
- Distress data

The date of crack seal is extremely important to: (i) ensure crack seal has been performed as requested by the research team, (ii) confirm an appropriate value has been entered in the database and, (iii) track and compare the performance of test sections. The distress data entered for each subsection for each survey period was meticulously checked with respect to the type of distresses, their severity and extent. The database was also reviewed to ensure that the other essential fields such as pavement type, type of aggregate in the surface, functional classification and traffic were entered.

The computer program checked each record for missing and/or invalid entries. Where such discrepancies were found, the entries were corrected and validated by consulting project liaison.

In 2008, the researchers visited 53 in-service test sections. The primary objective of the visit was to validate the condition data with respect to the field condition.

8.1 Validation of the Database

Validation of the database was done by performing a range of tests, or by manually reconciling suspect values. Data validation consisted of two steps: data screening and data verification. Data screening used a series of validation routines to screen all the data for suspect (questionable and erroneous) values. This task was accomplished by the computer program. Data verification was done on a case-by-case decision on what to do with the suspect values - retain them as valid, reject as invalid, or replace them with redundant valid values (if available). This part is where judgment by a qualified person is needed. All the records were restored and no data was left out as invalid. Table 5 shows the number of subsections available in the database.

Table 5. Data Available for Analysis

Number of subsections available for analysis				
Year	Flexible/Lime Stone	Flexible/Gravel	Composite/Lime Stone	Composite/Gravel
2000	340	130	110	105
2001	300	165	114	95
2002	289	160	140	93
2003	291	173	140	100
2004	280	175	140	100
2005	250	175	129	100
2006	204	169	95	100
2007	175	155	67	99
2008	175	155	67	99

It is interesting to see how the number of subsections has changed with time. New sections were added up to 2004, while at the same time some sections were lost due to either resurfacing and/or rehabilitation of test sites. Resurfacing and/or rehabilitation were prompted when the test sites deteriorated to a point warranting such an action. In about 5% of the cases, the test sites were dropped when all subsections were wrongly crack sealed. The ODOT-ECS database contains all the data, regardless of whether the test sites are *available* or *dropped,* and includes the remarks column describing the reasons for dropping a test site.

9. ANALYSIS OF DATA

Analysis was performed in four parts as below:

1. Comparing performance of all treated and control subsection sections, regardless of variables such as pavement type, type of aggregate in the surface layer and prior PCR of treated subsections as shown in Figure 16,
2. Comparing performance of treated and control subsection sections based on the pavement type, Figure 17, (regardless of aggregate type in surface layer and prior PCR),
3. Comparing performance of treated and control sections based on pavement type and aggregate in surface layer, Figure 18, (regardless of prior PCR),
4. Comparing performance of treated and untreated pavements based on prior PCR (Figure 19).

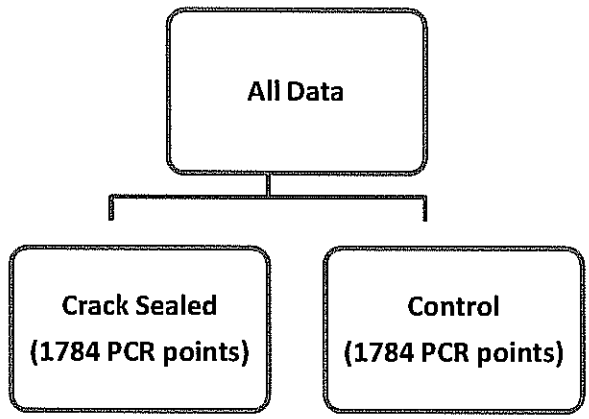


Figure 16. Comparing Performance of all Data Regardless of Experimental Variables

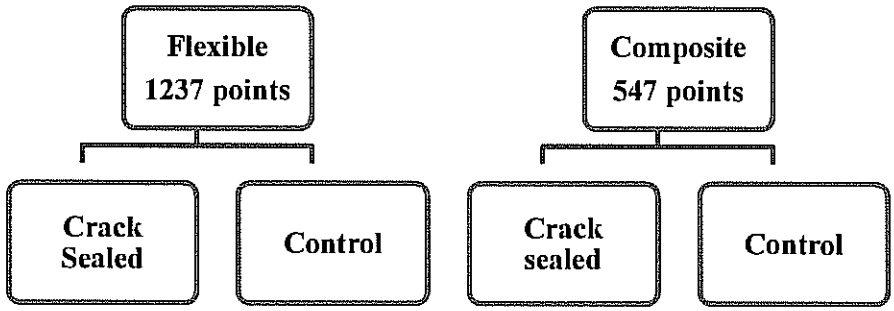


Figure 17. Comparing Performance Based on Pavement Type

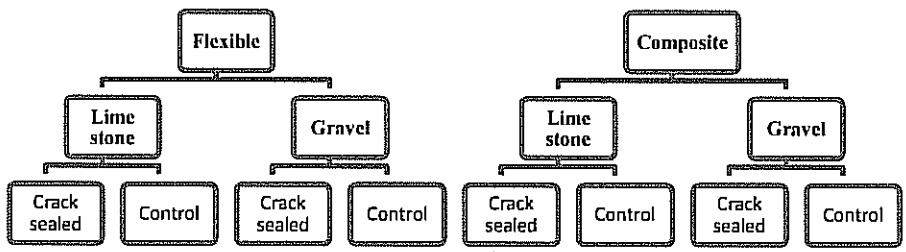


Figure 18. Comparing Performance Based on Pavement and Aggregate Type

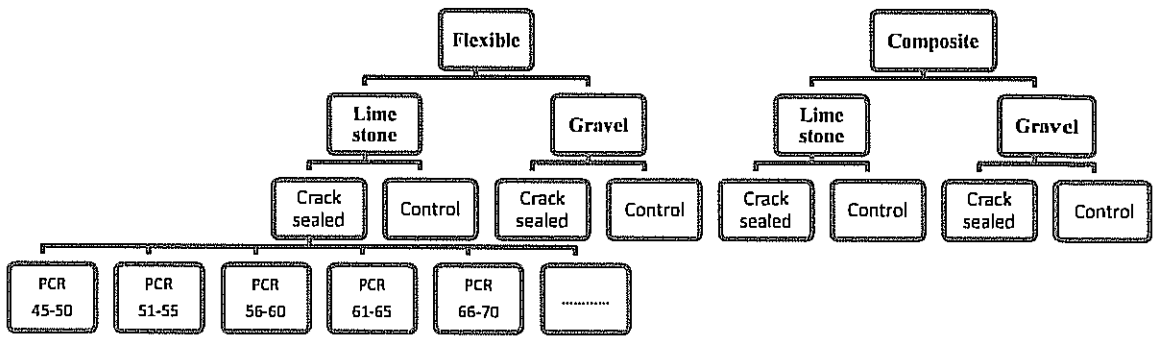


Figure 19. Comparing Performance Based on Pavement Type, Aggregate Type and Prior PCR

One of the analysis procedures adopted is testing for differences in average performance gain. If one desires to know whether a crack treatment applied to a group X affects its performance, a statistical test is applied to the experimental results to see whether one is justified in concluding that there is a difference between the average performance gain of the treated sections and the untreated (control) sections. The two alternative decisions that can be made are:

- The average performance gain of a crack sealed section is greater than that of the control section,
- There is no evidence to believe that the average performance gain of a crack sealed section is greater than that of the control section.

The decision procedure is a very logical one. Suppose, one wishes to test whether the subsections in group 1 that are crack sealed in year 2000 and the corresponding control subsections have the same average performance gain, on the average, after five years. The performance gains of the crack sealed and the control sections are tabulated and compared to test the significance of the difference between them. The question that arises is 'how large must this difference be in order to conclude that the two types differ, or 'is the observed difference significant?'. This will depend on several factors: the amount of variability within each group; the number of sections in each group; and the confidence in the accuracy of the conclusion. Using the data stored in the ODOT-ECS database, in conjunction with a statistical package, a comparative analysis was made. For statistical inference, hypothesis testing (also called significance testing) was used in comparing two formulations. Hypothesis testing allows an objective comparison of the two formulations to be made on objective terms, with knowledge of the risks associated with reaching the wrong conclusions.

9.1 Average Performance Gain

The Average Performance Gain values were calculated for each pair of treated and control subsection. The Average Performance Gain for all data was found to be 3.9. This indicates that, crack sealed pavements, on a whole, result in improved performance on a 5-year cycle. The difference was found to be statistically significant at 95% confidence interval. Figure 20 demonstrates the Average Performance Gain for the different pavement and aggregate types.

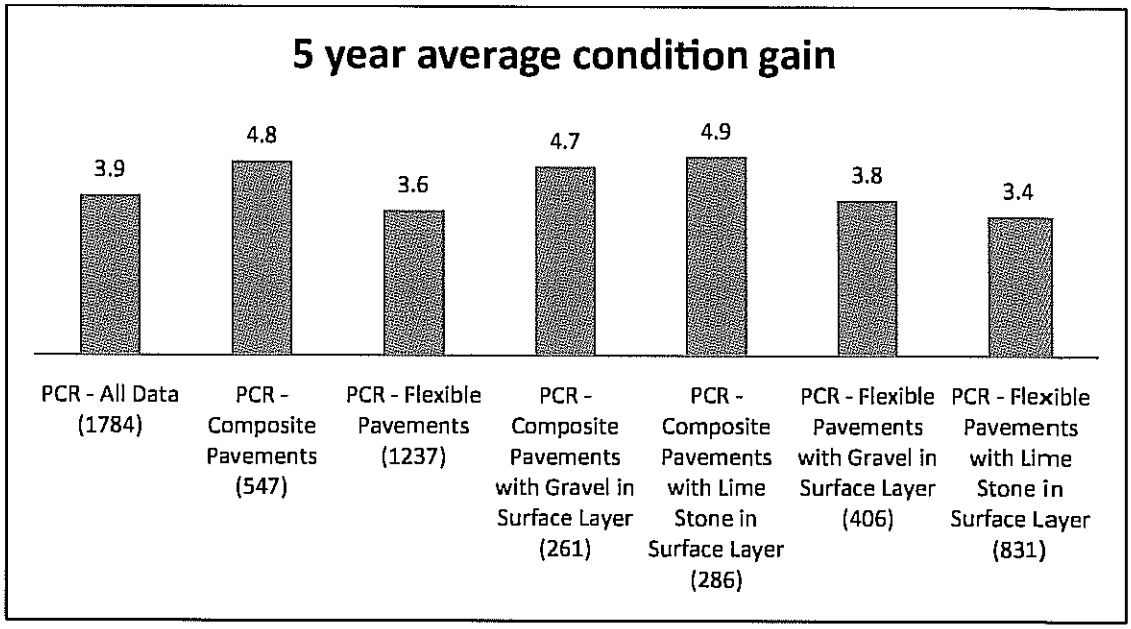


Figure 20. Average Performance Gain

The figure shows Average Performance Gain for various sets of data along with the number of PCR points (shown in parenthesis) that were used to establish the gain. All of these values were found to be statistically significant at 95% confidence interval.

The analysis was continued to include prior PCR groups as a variable. A consolidated table showing summary of results is presented in Table 6.

Table 6. Summary of Average Performance Gain Calculations

Prior PCR group	Variable						
	All data	Composite	Composite Gravel	Composite limestone	Flexible	Flexible Gravel	Flexible Limestone
56-60	3.20				3.20		3.54
61-65	3.54				3.54		3.60
66-70	**4.34**	**7.52**			3.81	2.77	**4.53**
71-75	**3.84**	**4.54**	**4.20**	**4.89**	3.27	**4.68**	2.85
76-80	**4.56**	**5.38**	**6.19**	**4.86**	3.60	**4.45**	2.98
81-85	3.61	3.94	3.89		3.49	3.64	3.30
86-90	3.70	3.18	3.06		3.94	5.38	1.34
91-95	2.83				2.80		3.31

Note: Blank cells indicate not enough data

The Average Performance Gain for each data set is shown in the table. The significance of the above table is, it highlights the importance and the extent to which the primary variables such as, pavement type, aggregate type in surface layer, and PCR of pavement prior to crack sealing affect the performance of crack sealed pavements. In certain cases, the Average Performance Gain was higher than 3.9, particularly when the prior PCR range was 66 to 80. From this table it may be inferred that maximum performance gain is realized for all pavement and aggregate types when crack sealing is performed while the PCR of the existing pavement is in the range of 66 to 80. The significance of this observation is that this analysis provides optimal timing of treatment (***when***) to maximize the performance. A careful look at the results also indicates that the average performance gain for composite pavements in the aforementioned range is relatively

higher than that of flexible pavements – 5.81 vs. 3.56. Furthermore, it appears that pavements with gravel in the surface layer display relatively higher performance gain.

9.2 Service Life Extension

Figure 21 shows two performance models – one for the treated subsections and the other for control subsections. These models were used to determine the service life extension, the results of which are shown in Table 7.

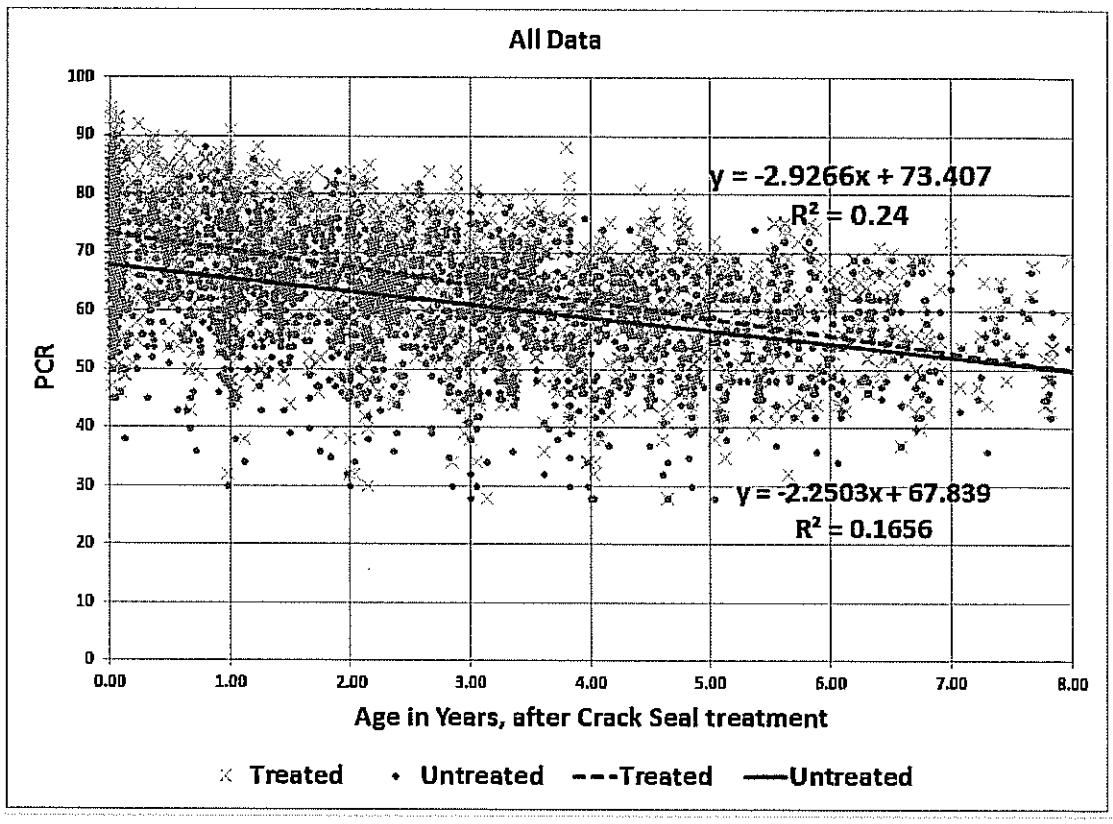


Figure 21. Performance Prediction Models for All Data

Table 7. Service Life Extension

Threshold PCR	Life of Crack sealed Subsections	Life of Control Subsections	Additional Life, years
60	4.6	3.5	1.1
65	2.9	1.3	1.6

The figure demonstrates a wide scatter of points. This is because all the variables are included in the analysis which makes the data heterogeneous. As a result, the R^2 is low and not significant. However, the results show a logical trend.

Similar trends are seen in the performance prediction models when the data was grouped according to pavement types and aggregate type. These models are presented in Figures 22 through 27.

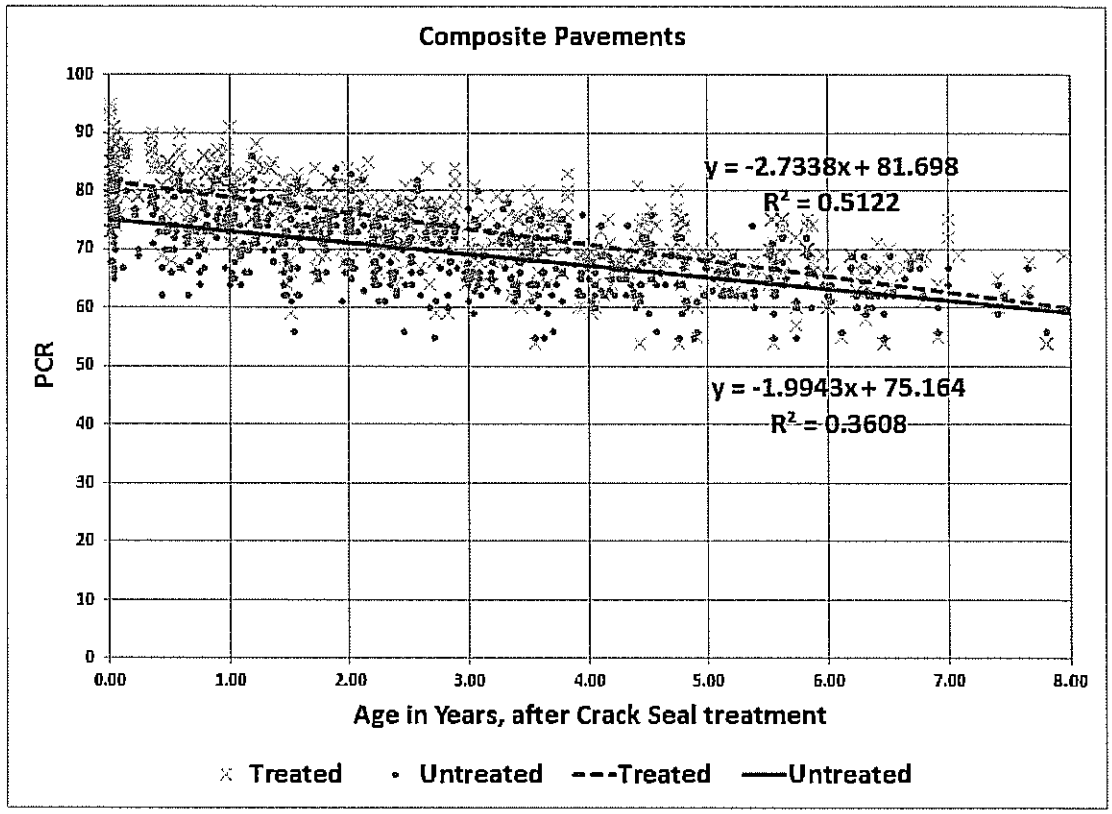


Figure 22. Performance Prediction Models for Composite Pavements

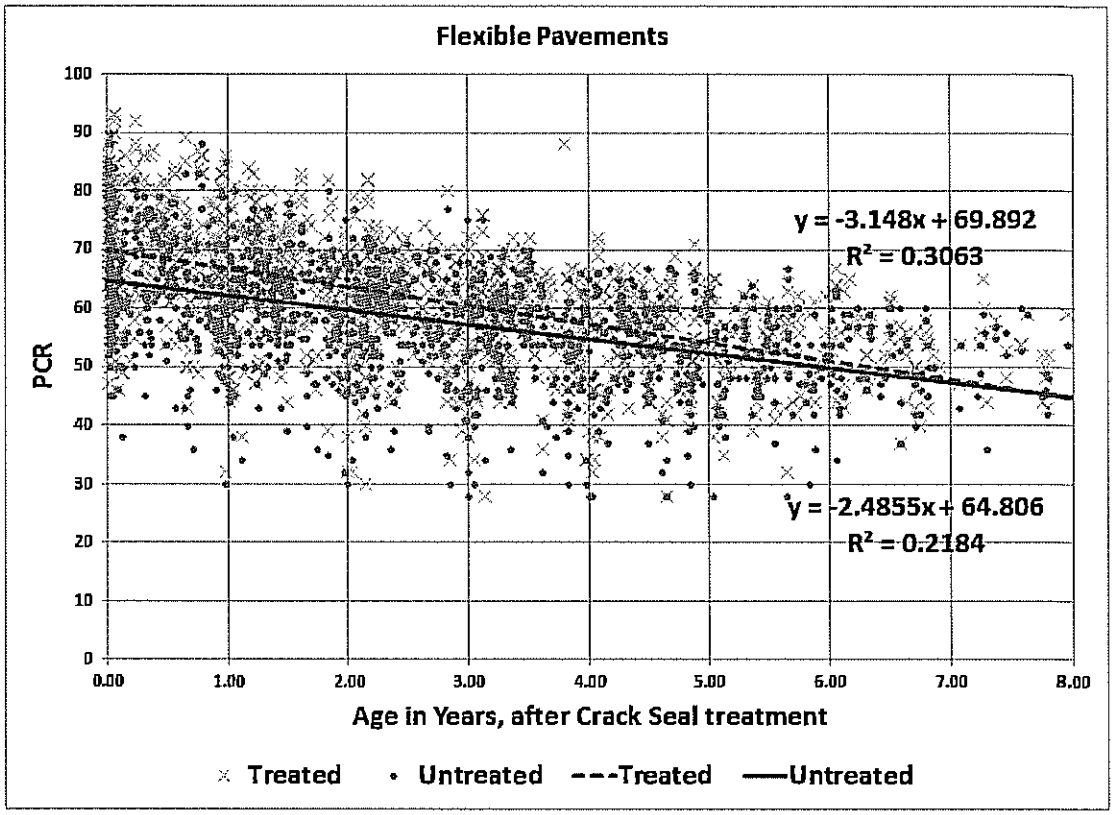


Figure 23. Performance Prediction Models for Flexible Pavements

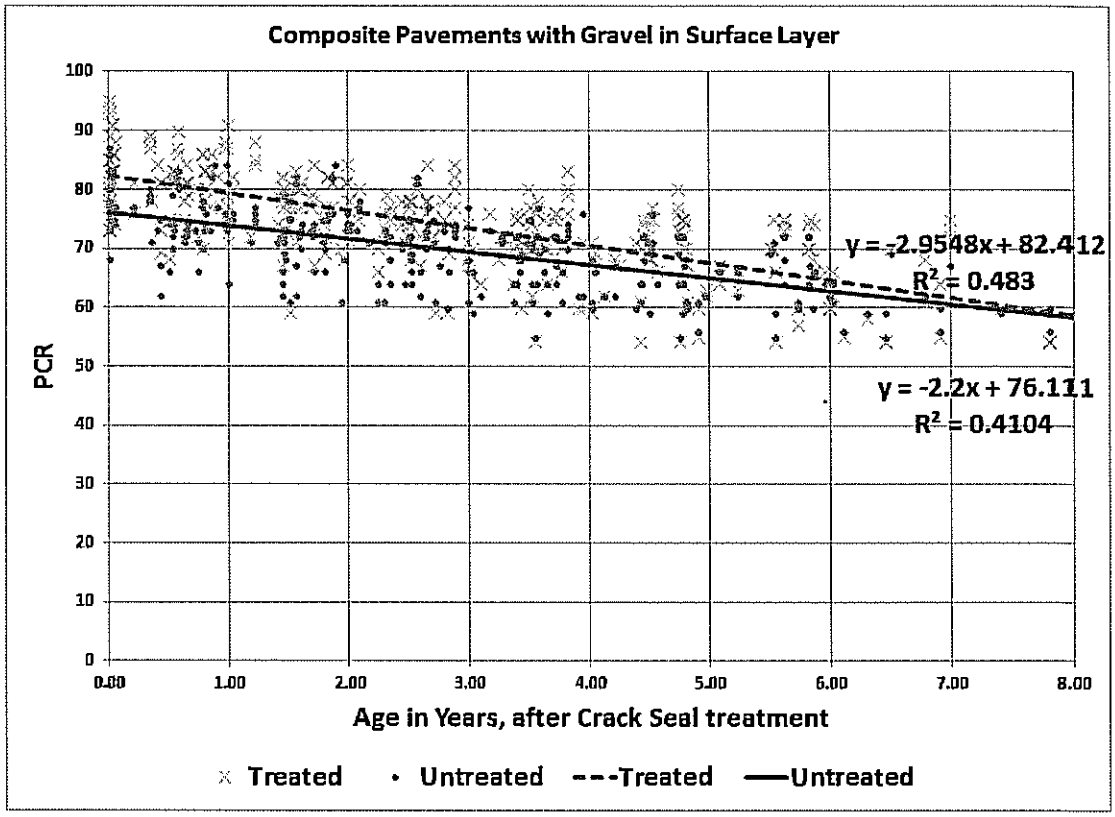


Figure 24. Performance Prediction Models for Composite Pavements with Gravel in Surface Layer

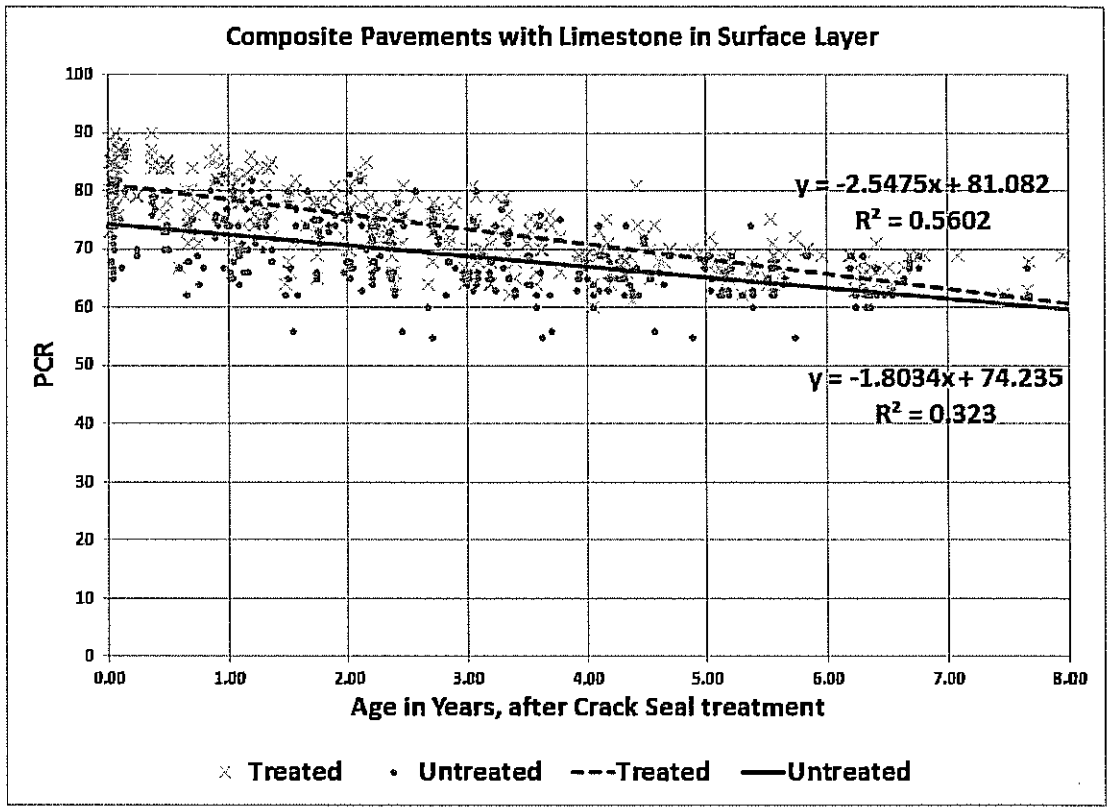


Figure 25. Performance Prediction Models for Composite Pavements with Limestone in Surface Layer

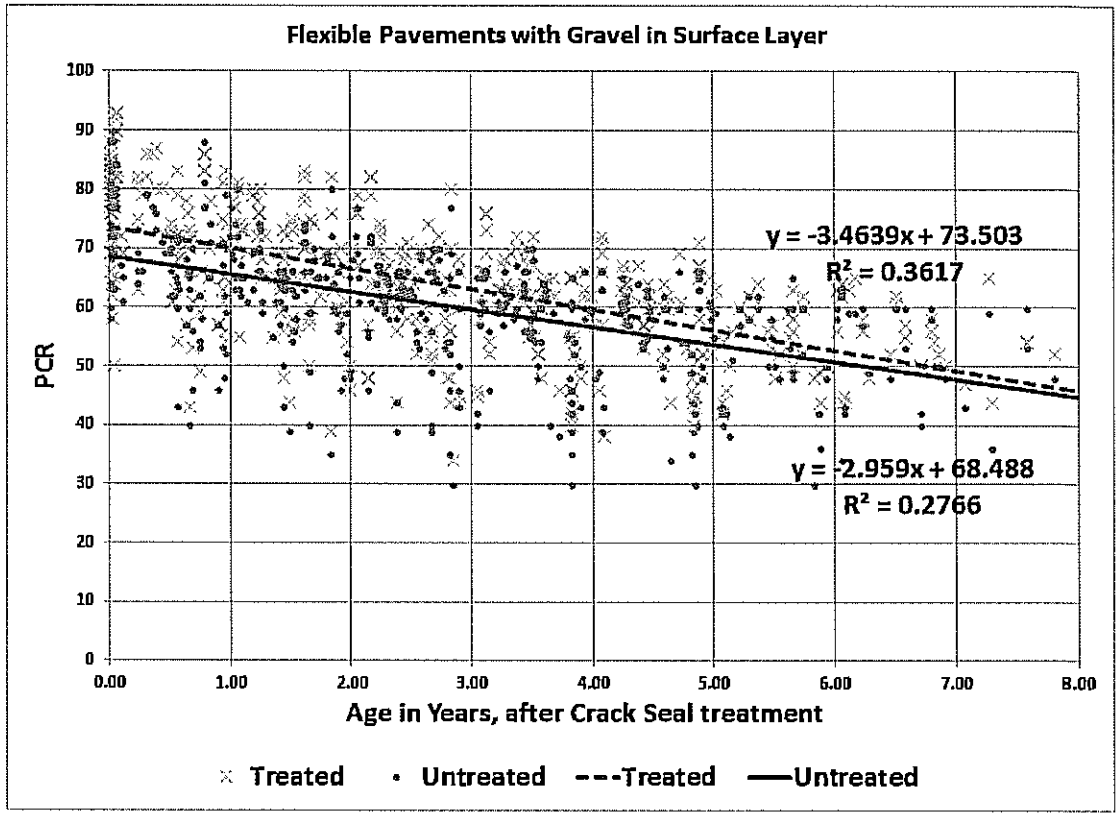


Figure 26. Performance Prediction Models for Flexible Pavements with Gravel in Surface Layer

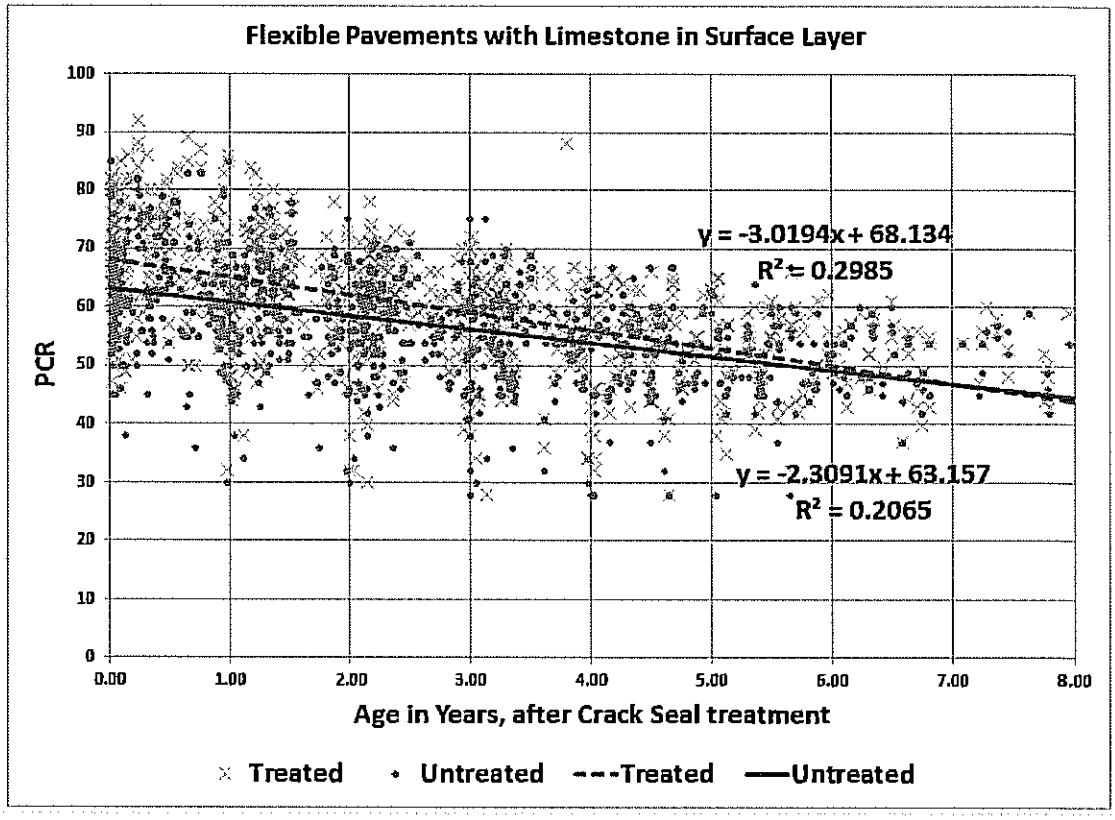


Figure 27. Performance Prediction Models for Flexible Pavements with Limestone in Surface Layer

Service life extensions for these models were calculated after parsing the data into Prior PCR Groups. Service life extension was calculated corresponding to two threshold PCRs, namely PCR=60 and PCR=65. These results are presented in tables 8 and 9 respectively.

Table 8. Summary of Service Life Extension (in years) Calculations corresponding to Threshold PCR = 60

Prior PCR group	Variable						
	All data	Composite	Composite Gravel	Composite limestone	Flexible	Flexible Gravel	Flexible Limestone
66-70	1.85	2.71			1.83	1.47	2.01
71-75	0.55		0.08	0.00	0.43		0.62
76-80	0.63	0.44	2.75		0.52	0.74	0.39
81-85	0.83	0.67			1.18	1.23	1.05
86-90	0.14						
91-95							
96-100	0.14				0.14		0.26

Note: Shaded area indicates not enough data to develop performance prediction model

Table 9. Summary of Service Life Extension (in years) Calculations corresponding to Threshold PCR = 65

Prior PCR group	Variable						
	All data	Composite	Composite Gravel	Composite limestone	Flexible	Flexible Gravel	Flexible Limestone
66-70	2.11	3.66			2.01	1.28	2.48
71-75	1.04	0.79	1.00	0.68	0.98	0.86	1.04
76-80	1.27	1.35	2.98	0.61	0.99	0.94	1.05
81-85	1.02	0.86			1.29	1.42	1.08
86-90	0.32					0.28	
91-95							0.39
96-100	0.16				0.16		0.33

Note: Shaded area indicates not enough data to develop performance prediction model

The analysis of performance based on the average performance gain, as shown in Table 6, revealed that maximum performance can be achieved by treating pavements when their PCR is in the range of 66-80. A careful study of service life extensions estimated as in Tables 8 and 9 shows that maximum service life extension can be obtained for a narrow PCR range of 66-70 instead of

66-80. The R^2 value for both types of pavement in the prior PCR group of 66-80 was found to be 0.33 (for treated) and 0.24 (for untreated). The performance models developed for the sections treated in the prior PCR group of 66-70 show a better fit with R^2 value equal to 0.49 (for treated) and 0.44 (for untreated).

9.3 Results in Summary

In summary, the analysis of data lead to objective evaluation of effectiveness of crack seal practices and included the following:

- Evaluation of the effect of crack sealing on pavement serviceability,
- Development of deterioration curves,
- Estimation of the effect of crack sealing on remaining service life, and
- Identification of optimal timing of treatment

10. ADDITIONAL PERFORMANCE INDICATORS TO EVALUATE THE EFFECTIVENESS OF CRACK SEALING

Ohio's PCR is a composite index derived as a function of several individual distresses. Individual distresses, listed according to pavement type, are rated based on their severity and extent. Distress weights and deduct values are used to generate PCR on a 0 to 100 scale. Figures 28 and 29 depict the list of distresses and the method of obtaining PCR for flexible and composite pavements.

Section: _____ Date: _____

Log mile: _____ to _____ **FLEXIBLE** Rated by: _____

Sta: _____ to _____

PAVEMENT CONDITION RATING FORM

DISTRESS	DISTRESS WEIGHT	SEVERITY WT.*			EXTENT WT.**			DEDUCT POINTS***
		L	M	H	O	F	E	
RAVELING	10	.3	.6	1	.5	.8	1	
BLEEDING	5	.6	.8	1	.6	.9	1	
PATCHING	5	.3	.6	1	.6	.8	1	
POTHOLES/DEBONDING	10	.4	.7	1	.5	.8	1 ✓	
CRACK SEALING DEFICIENCY	5	1	1	1	.5	.8	1	
RUTTING	10	.3	.7	1	.6	.8	1 ✓	
SETTLEMENT	10	.5	.7	1	.5	.8	1	
CORRUGATIONS	5	.4	.8	1	.5	.8	1	
WHEEL TRACK CRACKING	15	.4	.7	1	.5	.7	1 ✓	
BLOCK AND TRANSVERSE CRACKING	10	.4	.7	1	.5	.7	1 ✓	
LONGITUDINAL JOINT CRACKING	5	.4	.7	1	.5	.7	1	
EDGE CRACKING	5	.4	.7	1	.5	.7	1	
RANDOM CRACKING	5	.4	.7	1	.5	.7	1 ✓	

*L = LOW **O = OCCASIONAL TOTAL DEDUCT =

M = MEDIUM F = FREQUENT SUM OF STRUCTURAL DEDUCT (✓) =

H = HIGH E = EXTENSIVE 100 - TOTAL DEDUCT = PCR =

*** DEDUCT POINTS = DISTRESS WEIGHT X SEVERITY WT. X EXTENT WT.

REMARKS:

Figure 28. ODOT's Pavement Condition Rating Form for Flexible Pavements

Section: _____ Date: _____

Log mile: _____ to _____ **COMPOSITE** Rated by: _____

Sta: _____ to _____

PAVEMENT CONDITION RATING FORM

DISTRESS	DISTRESS WEIGHT	SEVERITY WT.*			EXTENT WT.**			DEDUCT POINTS***
		L	M	H	O	F	E	
RAVELING	10	.3	.6	1	.5	.8	1	
BLEEDING	5	.6	.8	1	.6	.9	1	
PATCHING	5	.3	.6	1	.6	.8	1	
SURFACE DISINTEGRATION or DEBONDING	5	.3	.6	1	.6	.8	1	
RUTTING	10	.3	.7	1	.6	.8	1	
PUMPING	15	.7	.7	1	.3	.7	1 ✓	
SHATTERED SLAB	10	.6	.8	1	.7	.9	1 ✓	
SETTLEMENTS	5	.4	.7	1	.6	.8	1	
TRANSVERSE CRACKS, UNJOINTED BASE	20	.2	.6	1	.4	.6	1 ✓	
JOINT REFLECTION CRACKS, JOINTED BASE	12	.2	.6	1	.4	.8	1 ✓	
INTERMEDIATE TRANSVERSE CRACKS, JOINTED BASE	8	.2	.6	1	.4	.8	1 ✓	
LONGITUDINAL CRACKING	5	.2	.6	1	.4	.8	1 ✓	
PRESSURE DAMAGE/UPHEAVAL	5	.4	.6	1	.5	.8	1	
CRACK SEALING DEFICIENCY	5	1	1	1	.5	.8	1	

*L = LOW **O = OCCASIONAL TOTAL DEDUCT =

M = MEDIUM F = FREQUENT SUM OF STRUCTURAL DEDUCT (✓) =

H = HIGH E = EXTENSIVE 100 - TOTAL DEDUCT = PCR =

*** DEDUCT POINTS = DISTRESS WEIGHT X SEVERITY WT. X EXTENT WT.

REMARKS:

Figure 29. ODOT's Pavement Condition Rating Form for Composite Pavements

Although the intent of the present study was to determine the effect of crack sealing on overall pavement condition, it can be argued that crack sealing is a local treatment at the crack locations and this treatment may not have influence on distresses such as rutting, bleeding, settlements, pumping and patching to name a few. Hence it was thought that analyzing the data with respect to distresses related to cracking of pavements may isolate the distresses and provide better representation of the effect of crack sealing. The review panel suggested development of additional performance indicators such as:

1. PCR excluding C/S Deficiency (PCR – CS)
2. Cracking Distress Value (CDV)
3. Cracking Distress excluding Random cracking (CDV - random cracking)
4. Cracking Distress including Raveling (CDV + raveling)
5. Potholes + Patching

Crack seal deficiency distress carries a distress weight equal to five points. (PCR – CS) is obtained by excluding this distress. In doing so, the maximum points a pavement can achieve is 95.

Cracking Deduct Value (CDV) considers only the crack related distresses for both flexible and composite pavements. Tables 10 and 11 list the distresses considered for developing CDV.

Table 10. List of Cracking Distresses in Flexible Pavements

Distress name	Distress weight	Severity Weight			Extent Weight		
		Low	Medium	High	Occasional	Frequent	Extensive
C/S Deficiency	5	1	1	1	0.5	0.8	1
Whl-Trk Crack	15	0.4	0.7	1	0.5	0.7	1
Blk&Trv Crack	10	0.4	0.7	1	0.5	0.7	1
Long. Jt. Crack	5	0.4	0.7	1	0.5	0.7	1
Edge Crack	5	0.4	0.7	1	0.5	0.7	1
Random Crack	5	0.4	0.7	1	0.5	0.7	1

Table 11. List of Cracking Distresses in Composite Pavements

Distress name	Distress weight	Severity Weight			Extent Weight		
		Low	Medium	High	Occasional	Frequent	Extensive
Trv. Crack (Unjointed base)	20	0.2	0.6	1	0.4	0.8	1
Refl. Crack (Jointed base)	12	0.2	0.6	1	0.4	0.8	1
Int. Trv. Crack (Jointed base)	8	0.2	0.6	1	0.4	0.8	1
Long Crack	5	0.2	0.6	1	0.4	0.8	1
C/S Deficiency	5	1	1	1	0.5	0.8	1

CDV is calculated as:

$$\text{CDV} = \frac{Maximum\ Crack\ Deduct\ Points - Total\ Crack\ Deduct\ Points}{Maximum\ Crack\ Deduct\ Points} x\ 100$$

The maximum deduct points are 45 and 30 for flexible and composite pavements respectively. Note that the composite pavement has distresses related to both jointed base and unjointed base types. Appropriate distress weights were considered during calculations based on

the type of composite pavement. Similar to CDV, other indicators were calculated by using the respective distress weights. Table 12 shows the maximum deduct points for each indicator.

Table 12. Maximum deduct points for each indicator

Indicator	Maximum Deduct Points		Normalized Maximum Deduct Points	
	Composite	Flexible	Composite	Flexible
PCR	100	100	100	100
PCR-C/S DEF.	95	95	100	100
CDV	50	45	100	100
CDV - Random	NA	40	100	100
CDV + Raveling	40	55	100	100
Potholes + Patching	5	15	100	100

Unlike PCR which operates on 0 to 100 scale, the additional indicators have a different scale. For a realistic comparison among them, these values were normalized to 100. The results thus obtained are presented in Figures 30 through 34. Non-normalized values are also indicated in these figures.

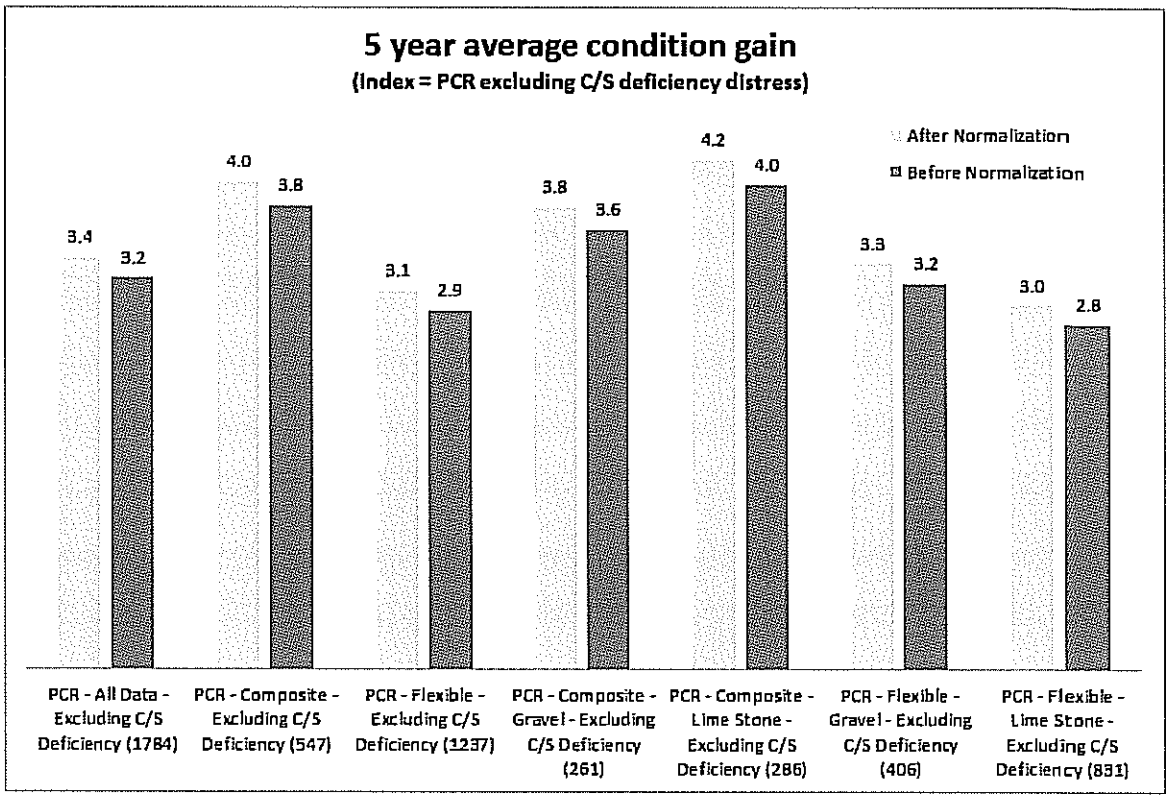


Figure 30. Effectiveness Based on (PCR – CS Deficiency)

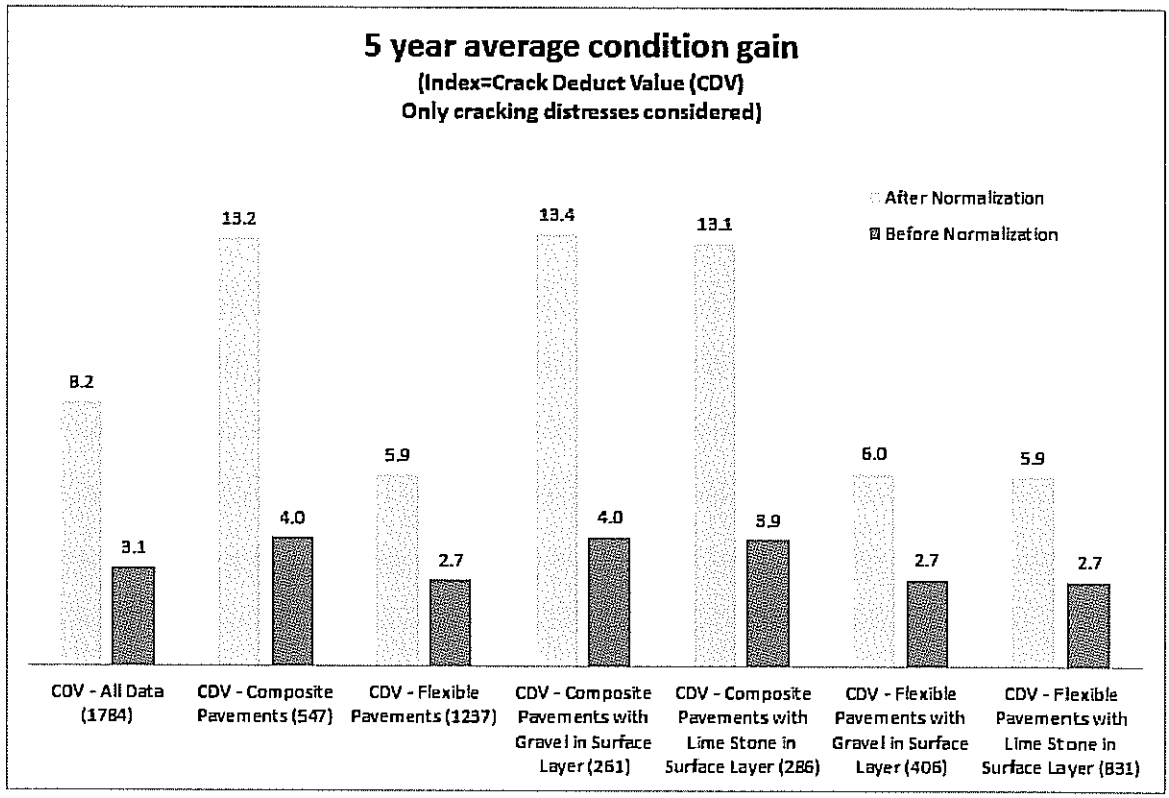


Figure 31. Effectiveness Based on CDV

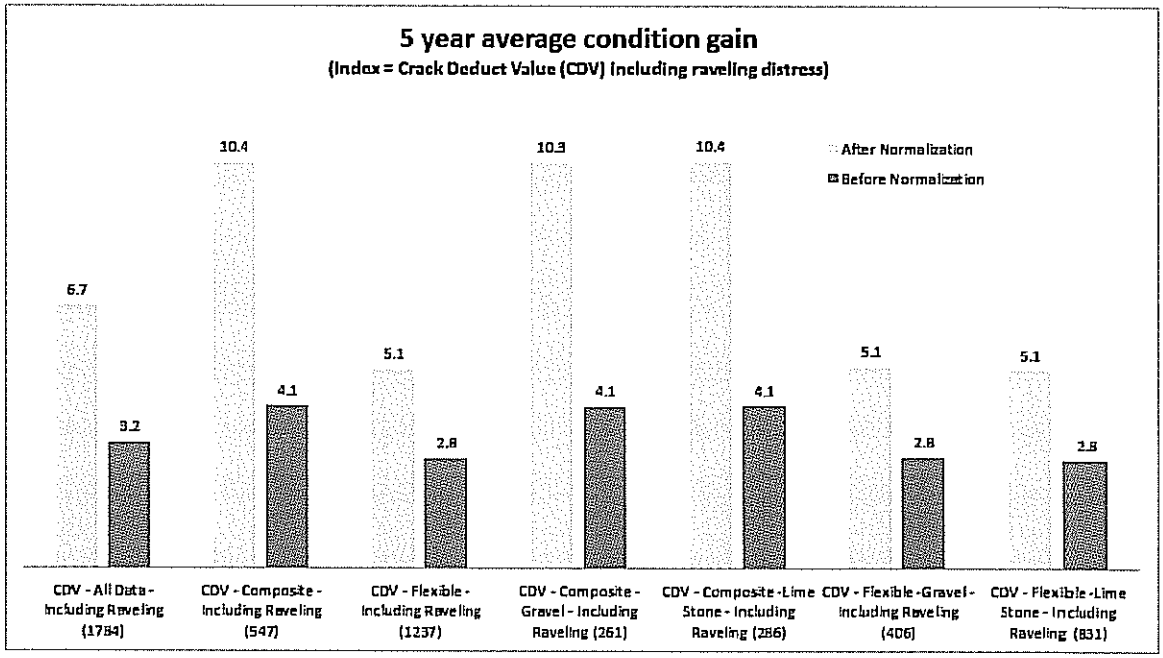
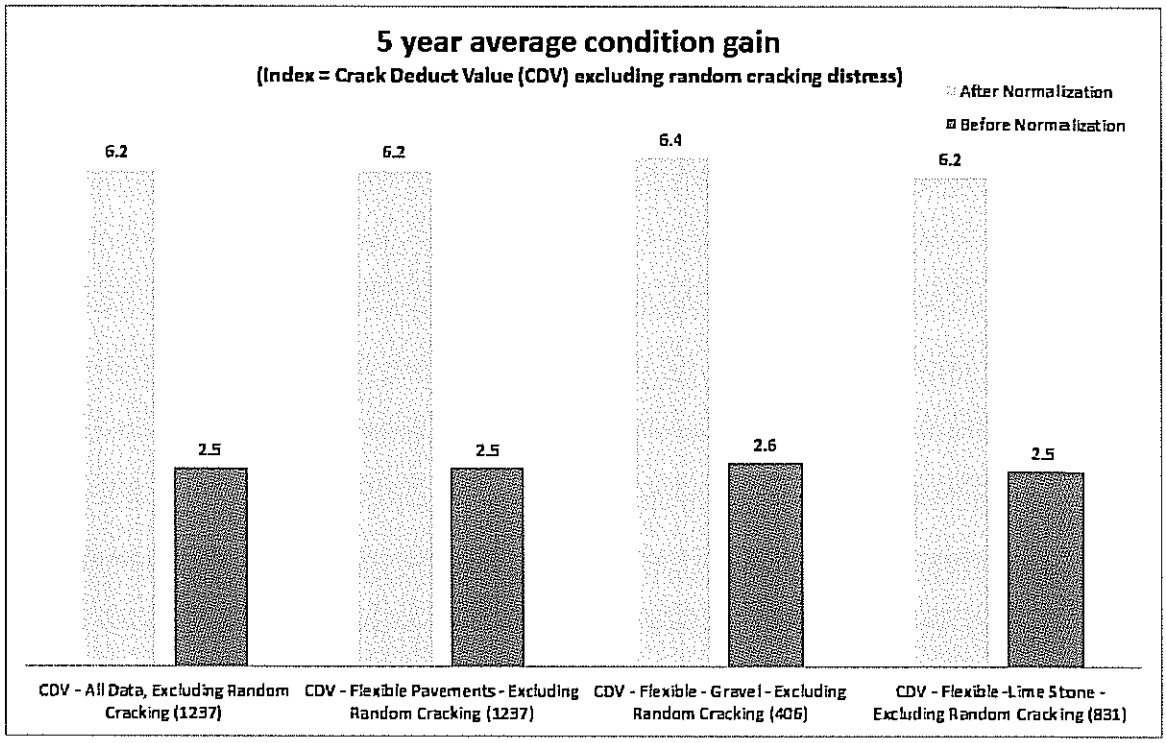


Figure 32. Effectiveness Based on CDV + Raveling



Note: Only flexible pavements are presented in above graph as random cracking distress is not associated with composite pavements.

Figure 33. Effectiveness Based on (CDV – Random) Cracking

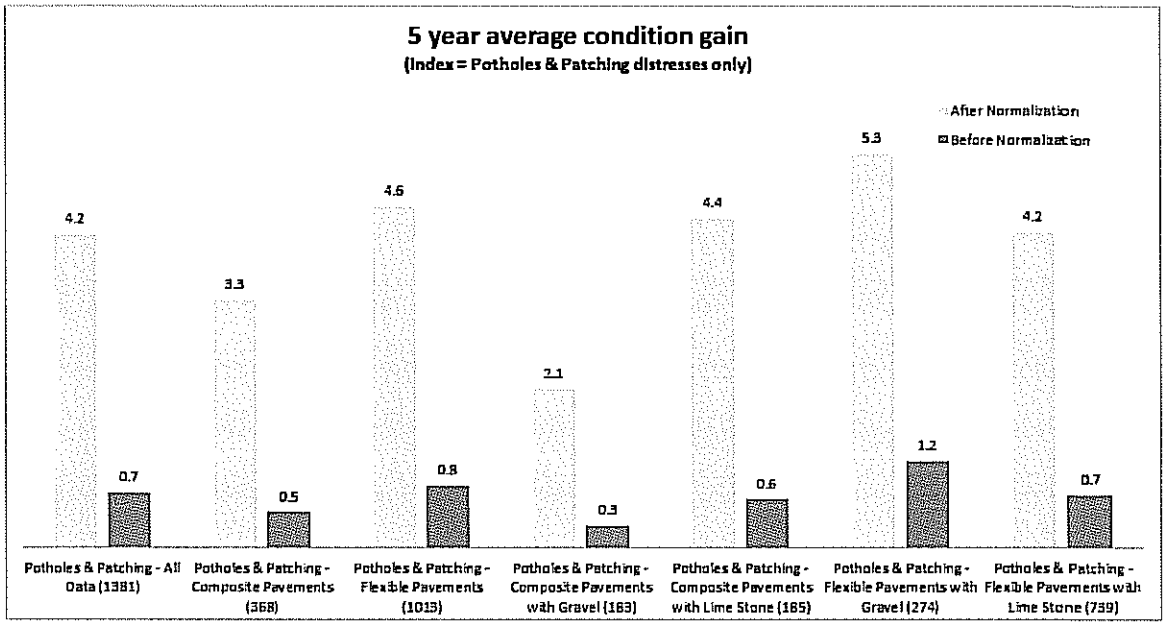


Figure 34. Effectiveness Based on Potholes and Patching

These figures indicate that crack sealing is an effective pavement preventive maintenance treatment. All the different indicators show a similar pattern of variation in effectiveness of crack sealing.

11. COST-EFFECTIVENESS OF CRACK SEALING

The benefits of crack sealing in this study, observed in terms of increase in average performance gain and extension of pavement service life, has been well-documented in the previous sections. The average performance gain of pavements in the PCR range 66-80 based on pavement type (from Table 6) is 4.2, 5.8, and 3.6 years for all pavement types, composite pavements, and flexible pavements respectively. And the service life of pavements based on pavement type in the same PCR range calculated at two different PCR threshold points namely, PCR=60 and PCR=65 is presented in Table 13.

Table 13. Service Life of Pavements in PCR Range 66-80

	Threshold PCR=60			Threshold PCR=65		
	All Pavements	**Composite Pavements**	**Flexible Pavements**	**All Pavements**	**Composite Pavements**	**Flexible Pavements**
Life of Crack sealed Subsections	4.87	7.70	3.14	3.25	5.82	1.81
Life of Control Subsections	3.79	7.46	2.09	1.56	4.55	0.29
Extension of Service Life, years	1.08	0.23	1.06	1.69	1.27	1.52

Consequentially, the question therefore is how do decision-makers use these observations to decide if application of crack seal as a strategy, in concert with time, is cost-effective? Therefore, a comparative cost analysis, using a common metric such as the Net Present Value (NPV) is performed. Net Present Value is the economic indicator of choice. The formula used to calculate NPV is:

$$NPV = \sum_{t=0}^{N} \left[\frac{C_t}{(1+r)^t} \right]$$

Where:

t – time at which cash is spent, N – total time under consideration, r – discount rate (4%), C_t – amount spent at time t

The two scenarios considered are namely, a) crack seal now and apply chip seal after a certain period of time and b) Do nothing now but apply chip seal after a given number of years. From ODOT's 2009 and 2010 construction records, the cost per lane mile for crack seal and chip seal is known to be $2,504 and $10,565 respectively. The results of the cost analysis are presented in Figures 35 through 40.

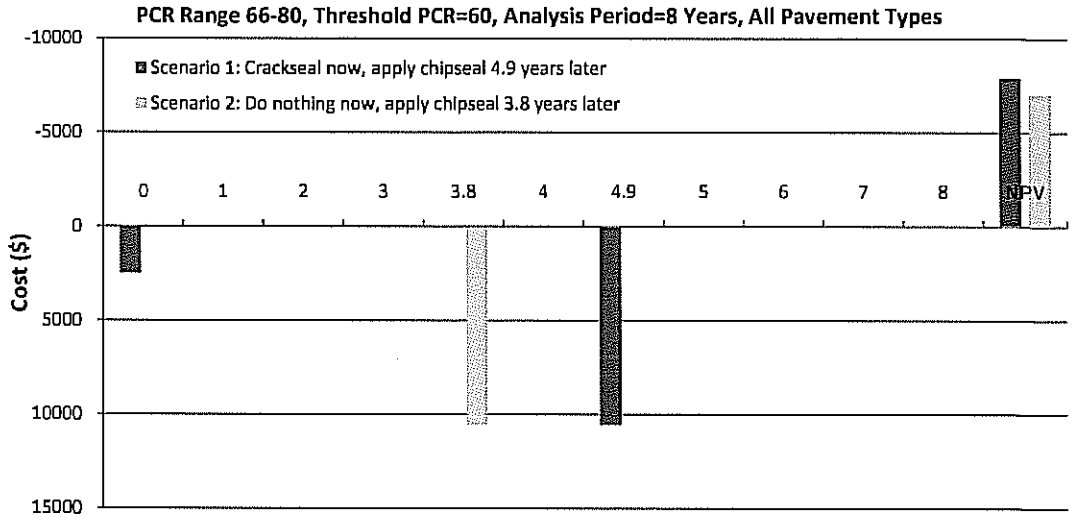


Figure 35. Cost-effectiveness of Two Alternate Treatments Based on Service Life for All Pavement Types

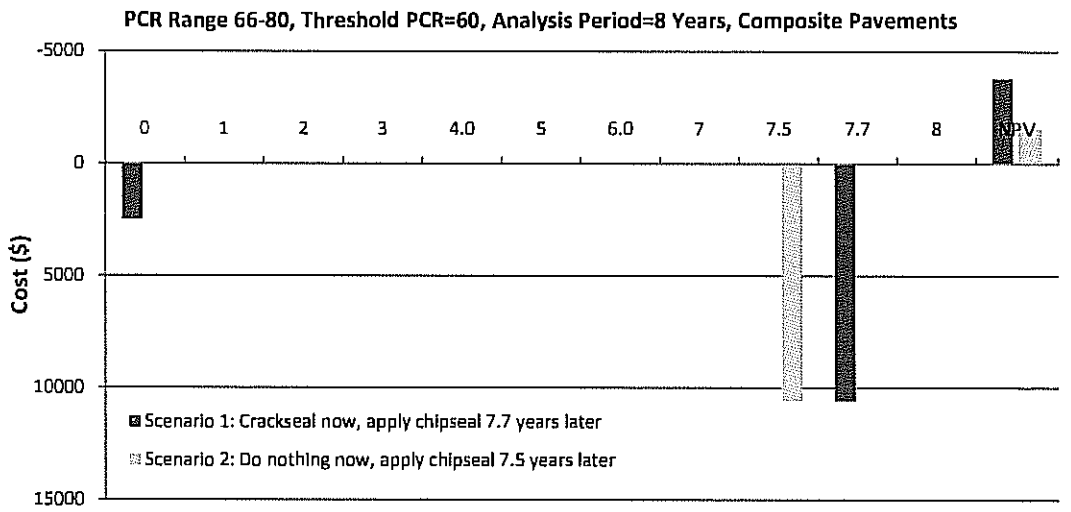


Figure 36. Cost-effectiveness of Two Alternate Treatments Based on Service Life for Composite Pavements

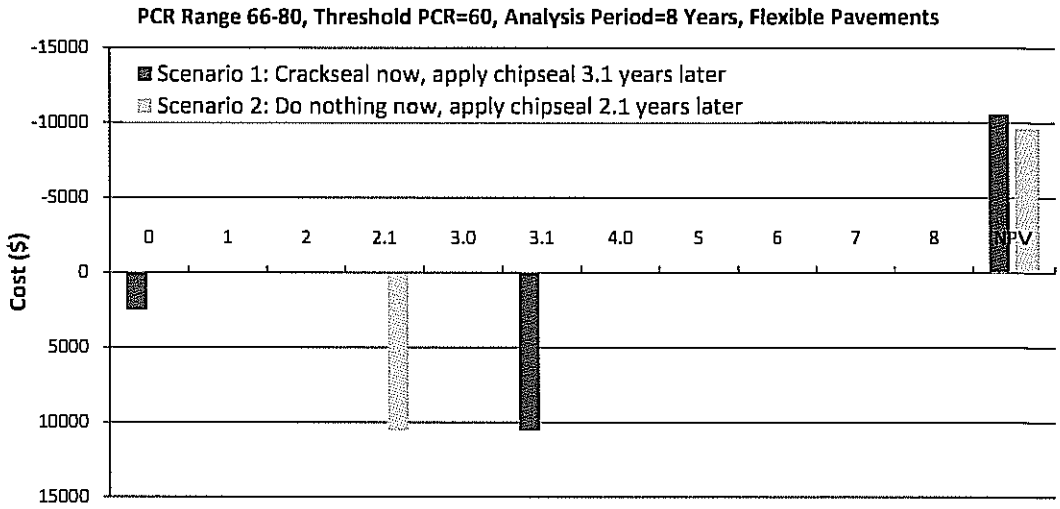


Figure 37. Cost-effectiveness of Two Alternate Treatments Based on Service Life for Flexible Pavements

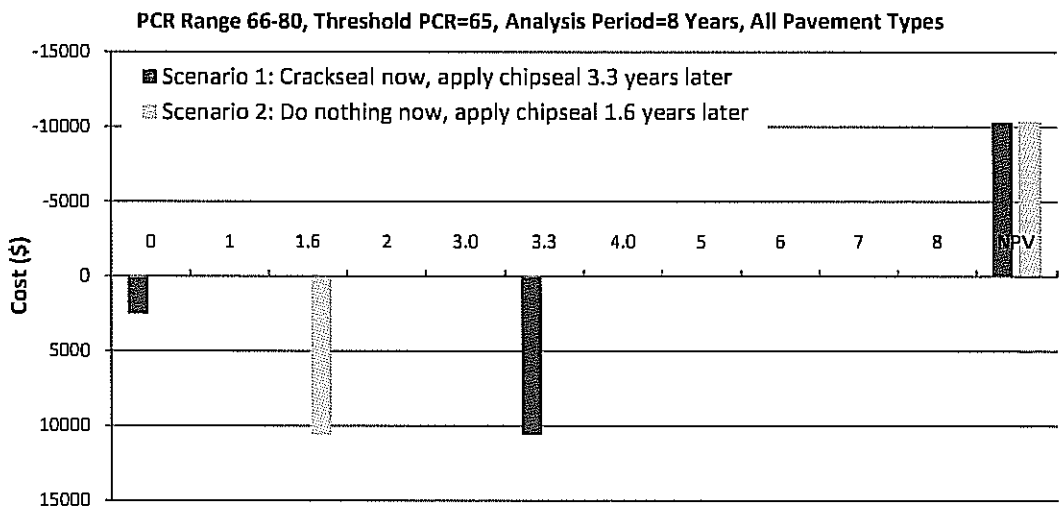


Figure 38. Cost-effectiveness of Two Alternate Treatments Based on Service Life for All Pavement Types

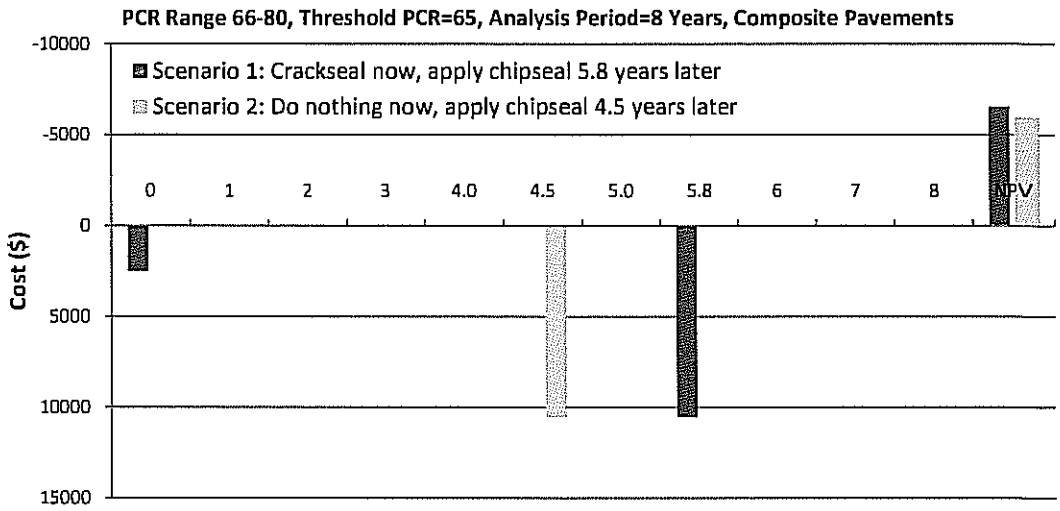


Figure 39. Cost-effectiveness of Two Alternate Treatments Based on Service Life for Composite Pavements

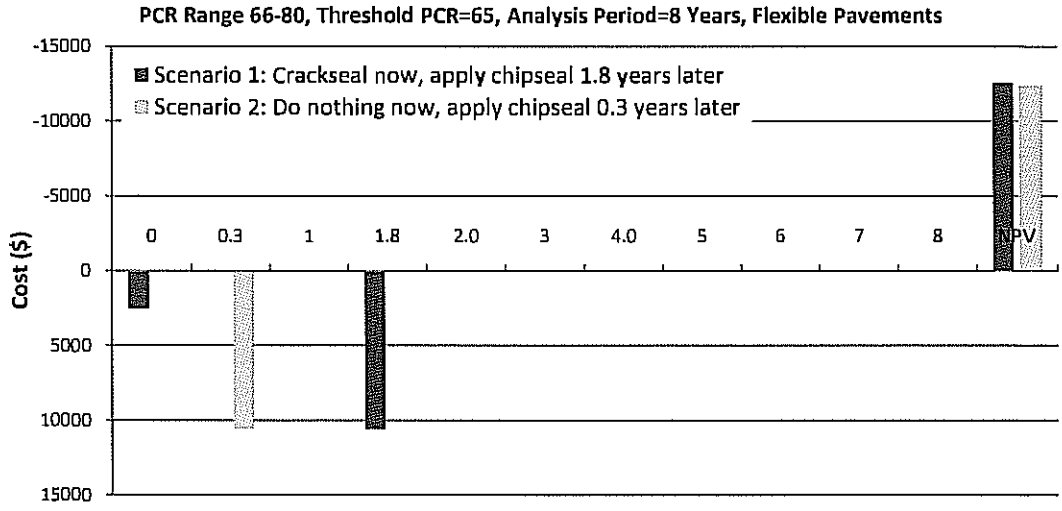


Figure 40. Cost-effectiveness of Two Alternate Treatments Based on Service Life for Flexible Pavements

As can be seen from the above figures, crack sealing turns out to be relatively ineffective in the PCR range of 66-80 for service life estimates calculated at threshold PCR of 60 and 65 for all conditions except one – illustrated in Figure 38 – where there is a marginal gain in using crack seal treatment.

In summary, as mentioned earlier, there is average performance gain (in terms of Pavement Condition Rating) because of crack seal treatment for all pavement types in the PCR range of 66-80. However, a comparative analysis of two different treatment scenarios, based on NPV estimates, calculated using the service life of treated and untreated pavement data belonging to the PCR range of 66-80, by and large does not indicate crack seal to be a cost-effective strategy.

To understand this contradiction, the researchers narrowed the PCR range to 66-70 in order to evaluate the cost-effectiveness of crack seal based on NPV estimates determined using the service life of treated and untreated pavements.

The service life estimates of treated and untreated pavements based on pavement type in the PCR range of 66-70 for two PCR thresholds namely, PCR=60 and PCR=65 is presented in Table 14. The shaded boxes in the table is intended to indicate that the service life of control subsections could not be determined using the available data. Thus, the cost-effectiveness of crack sealing is evaluated for service life estimates calculated at a threshold PCR of 60 for all pavement types and a threshold PCR of 65 for composite pavements.

Table 14. Service Life of Pavements in PCR Range 66-70

	Threshold PCR=60			Threshold PCR=65		
	All Pavements	**Composite Pavements**	**Flexible Pavements**	**All Pavements**	**Composite Pavements**	**Flexible Pavements**
Life of Crack sealed Subsections	3.12	7.44	2.74	1.69	5.07	1.25
Life of Control Subsections	1.27	4.75	0.91		1.42	
Additional Life, years	1.85	2.69	1.83		3.65	

The two treatment scenarios considered previously are used to estimate the NPV for different pavement types in the prior PCR range of 66-70. The results of the cost analysis are presented in Figures 41 through 44.

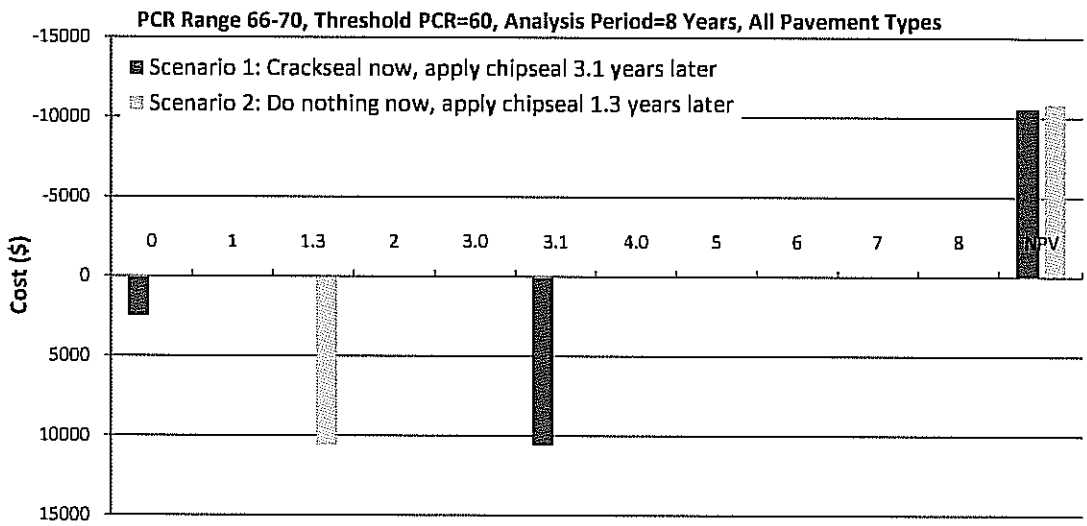


Figure 41. Cost-effectiveness of Two Alternate Treatments Based on Service Life for All Pavement Types

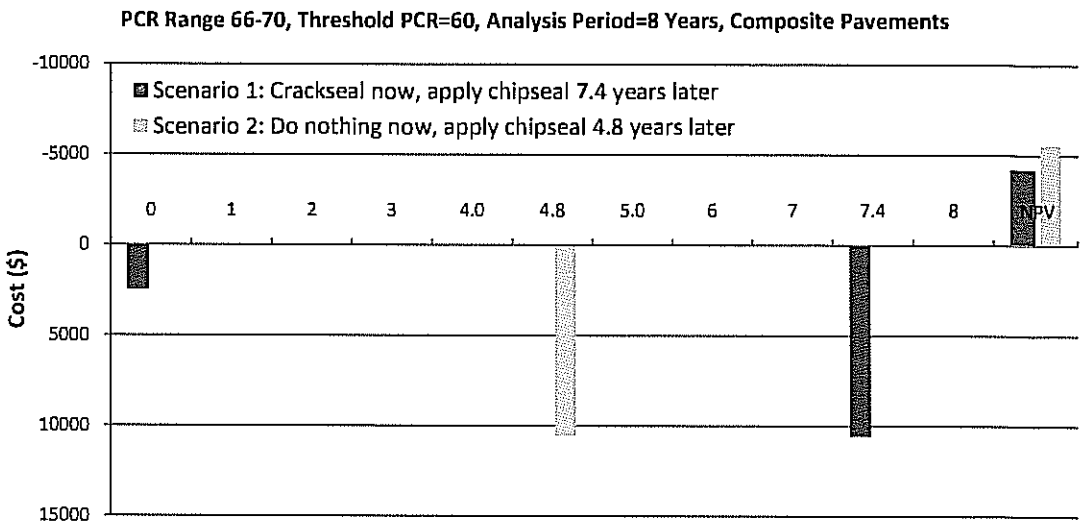


Figure 42. Cost-effectiveness of Two Alternate Treatments Based on Service Life for Composite Pavements

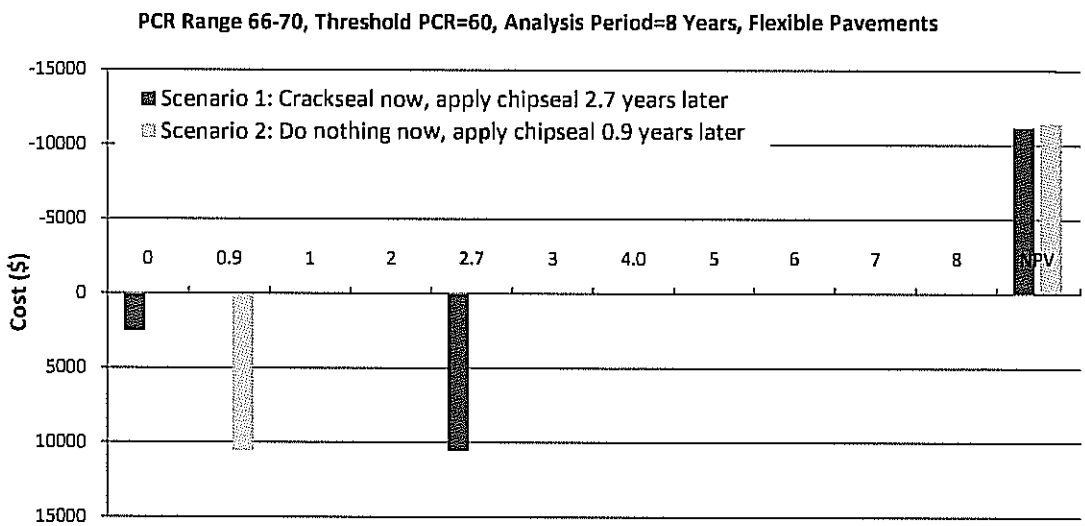


Figure 43. Cost-effectiveness of Two Alternate Treatments Based on Service Life for Flexible Pavements

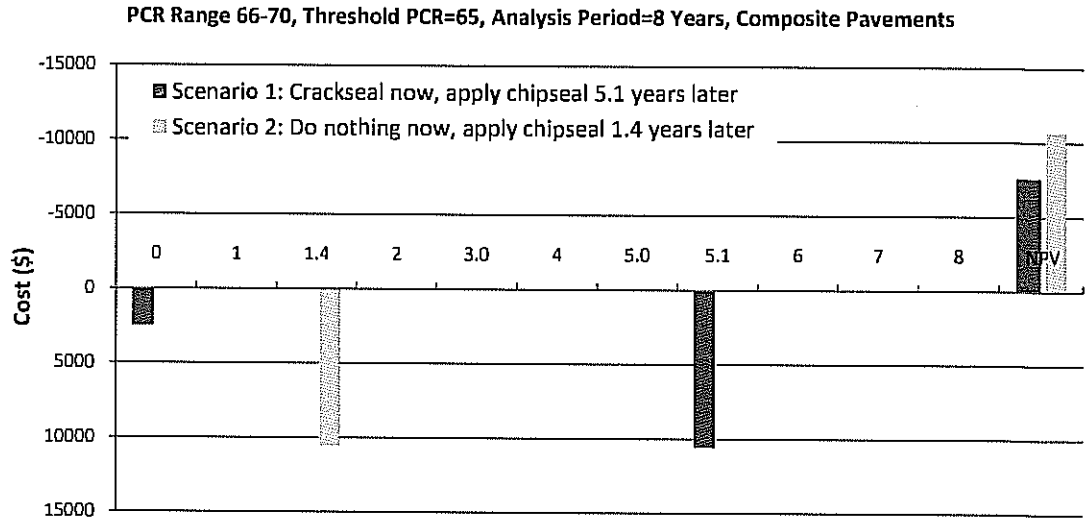


Figure 44. Cost-effectiveness of Two Alternate Treatments Based on Service Life for Composite Pavements

It is clear from the above figures that crack sealing turns out to be relatively effective in the PCR range of 66-70 for service life estimates calculated in Table 14. This result is in congruence with the average performance gain observed for the same PCR range (presented in Table 6), which also indicates that crack sealing enhances pavement performance. The results of the cost-analysis are summarized in Table 15. As can be seen from the table, the benefits of performance gain and service life gets translated to economic benefits when crack seal is applied for pavements in the PCR range of 66-70. Furthermore, it can be seen from Figures 42 and 44 that application of crack seal treatment to composite pavements in the prior PCR range of 66-70 is more cost-effective compared to flexible pavements.

Table 15. Cost-effectiveness of Crack Seal Based for Different Pavement Condition (Analysis Period=8 Years)

PCR Range	Threshold PCR	Pavement Type	Treatment Scenarios Compared	NPV	Is Crack Sealing Cost-effective?
66-80	60	All Pavements	Scenario 1: Crack seal now, apply chip seal 4.9 years later	$7,907	No
			Scenario 2: Do nothing now, apply chip seal 3.8 years later	$7,043	
		Composite	Scenario 1: Crack seal now, apply chip seal 7.7 years later	$3,779	No
			Scenario 2: Do nothing now, apply chip seal 7.5 years later	$1,576	
		Flexible	Scenario 1: Crack seal now, apply chip seal 3.1 years later	$10,581	No
			Scenario 2: Do nothing now, apply chip seal 2.1 years later	$9,620	
	65	All Pavements	Scenario 1: Crack seal now, apply chip seal 3.3 years later	$10,313	No
			Scenario 2: Do nothing now, apply chip seal 1.6 years later	$10,397	
		Composite	Scenario 1: Crack seal now, apply chip seal 5.8 years later	$6,554	No
			Scenario 2: Do nothing now, apply chip seal 4.5 years later	$5,971	
		Flexible	Scenario 1: Crack seal now, apply chip seal 1.8 years later	$12,575	No
			Scenario 2: Do nothing now, apply chip seal 0.3 years later	$12,394	
66-70	60	All Pavements	Scenario 1: Crack seal now, apply chip seal 3.1 years later	$10,590	**Yes**
			Scenario 2: Do nothing now, apply chip seal 1.3 years later	$10,856	
		Composite	Scenario 1: Crack seal now, apply chip seal 7.4 years later	$4,201	**Yes**
			Scenario 2: Do nothing now, apply chip seal 4.8 years later	$5,557	
		Flexible	Scenario 1: Crack seal now, apply chip seal 2.7 years later	$11,191	**Yes**
			Scenario 2: Do nothing now, apply chip seal 0.9 years later	$11,458	
	65	Composite	Scenario 1: Crack seal now, apply chip seal 5.1 years later	$7,608	**Yes**
			Scenario 2: Do nothing now, apply chip seal 1.4 years later	$10,681	

12. SUMMARY AND CONCLUSIONS

Sealing of cracks in asphalt surfaced pavements has long been one of the widely practiced pavement maintenance strategies by the highway agencies. Crack sealing is performed with intent to reduce water infiltration, prevent pumping and avoid the need for premature base and pavement repair. A successful crack sealing project can result in numerous benefits such as - improved pavement condition, increased safety, extended service life, reduced maintenance and rehabilitation needs and overall, lower life cycle costs. A host of factors namely: sealing materials, placement techniques, equipment, pavement types and condition, type and severity of crack sealed, regional environmental and traffic conditions, evaluation procedures and so on are known to directly influence the level of success that can be attained in a crack sealing project. These variables often act individually or collectively to affect the outcome of a crack seal project. Despite the intended benefits, crack sealing may also affect the pavement in many ways like, tracking of sealing material by tire action, reduced skid resistance, a rougher pavement etc. ***Crack sealing is beneficial if pavement life is increased while maintaining serviceability.***

A systematic evaluation will help to assess the effectiveness of an agency's current crack sealing practices and will provide necessary data to fine tune the prevailing practice by identifying specific areas that need improvement. The perceived benefits of such investigation include better utilization of public funds and greater return on the investment.

Realizing the importance of such an investigation, in 2000, the Ohio Department of Transportation initiated a 10-year study to 'statistically verify the effectiveness of its current force account crack sealing program on pavement condition and life'. The primary objective of the study was to develop a field experiment that would enable ODOT to collect long-term performance data. By

analyzing this long term performance data, it was desired that the study will resolve the following key issues:

- Do existing crack sealing practices within ODOT enhance pavement performance?
- If so, what is the optimum timing for treatment?
- Does crack sealing extend pavement life?
- Does crack sealing provide cost benefit? If so, to what extent?

Previous studies carried out by several federal and state agencies have attempted to address similar concerns. However, no consensus appears to exist about the effectiveness of crack sealing practices. In comparison, a cursory look at ODOT's existing crack sealing practices revealed the following information:

- A range of materials and methods are in use for crack sealing.
- The choice of a specific material/method depends on the county manager's understanding of the historical performance of various materials, pavement type (flexible or composite), regional conditions, availability of operating funds, and so on.
- The need for crack sealing is not an issue; instead, the primary concern is to investigate and document the effectiveness of crack sealing with respect to:

  (i) economic benefits,

  (ii) maintaining and/or improving serviceability, and

  (iii) extending pavement life.

During the period 2000 through 2002, ODOT set up over 700 test sections, each 1000 feet long, in asphalt surfaced pavements. The test sections were treated by crack sealing materials at various time periods reflecting varied pavement conditions. Control sections were set up in

adjacent areas which served as 'do-nothing' treatments. The county managers were provided with guidelines describing the pavement limits, crack sealing schedule, required documentation and reporting. All these tasks were well coordinated by the Office of Pavement Engineering and ODOT's district and county offices.

At the beginning of the study, a survey was conducted to summarize the prevailing crack sealing practices in Ohio. The district and county managers provided responses to a series of questions that assisted in summarizing the current crack sealing practices. The survey revealed there is a wide variation in the pavement condition prior to crack sealing. Additionally, many officials, based on their observation of historical performance of crack sealed pavements, recognized pavement type and the type of aggregate used in the surface layer as key factors affecting the performance of treated pavements. The field experiment was carefully designed to establish test sections that included the variables namely:

- Pavement type (flexible and composite),
- Type of aggregate in the surface layer (lime stone and gravel), and
- Pavement condition prior to crack sealing.

The test sections were surveyed annually to record their pavement condition ratings from the time prior to crack sealing and for a period of five to nine years after sealing, depending on the longevity of the test sections. Pavement condition survey was conducted in accordance with ODOT's guidelines for pavement condition rating, by visually observing surface distresses and recording their severity and extent. One technician conducted condition survey of all the sections throughout the life of the study, thus eliminating differences in judgment between raters.

An interactive database was developed for (i) data gathering, (ii) data storing, (iii) data processing, and (iv) data analysis. A vast amount of data was acquired that included:

- PCR data for each year, for each of the 1000 ft long section, including individual distress data,
- Crack seal information: date of treatment, type, amount and cost of material, application procedure, pavement surface preparation procedure, environmental condition during crack treatment, and
- Section description: pavement type, type of aggregate in surface layer, functional classification, number of lanes.

In 2008, when the data collection process was completed, a total of 387 treated sections and corresponding control sections became available for the analysis of effectiveness of crack sealing. A sum of 1784 PCR points were available for the performance analysis of the treated and control sections.

As a first step in the analysis, all the PCR points were plotted relative to their corresponding age. This task resulted in the development of two performance curves – one for the treated and one for the control sections. The curves were used to derive two performance indicators namely:

- Average performance gain due to crack sealing, and
- Service life comparison of treated and control sections.

The difference in PCR values of the treated and control section for each test section was calculated for each year, up to five years. The average of these differences was denoted as 'average performance gain'. The average performance gain of all the crack sealed pavements, regardless of pavement type and prior pavement condition, ranged from 2 to 7 PCR points with an overall average of 3.9.

This meant that, the crack sealed pavements have, in general, performed better than the untreated sections on a 5-year life cycle. The difference was found to be statistically significant at 95% confidence interval.

Next, the performance models were used to determine the service life of the pavements. The treated pavements were found to have an additional service life of 1.1 years when compared using a threshold PCR of 60.

With a view to find the effect of experimental variables on the performance of treated pavements, the database was sorted out according to variables namely, pavement type (flexible and composite), aggregate type (lime stone and gravel), and the pavement condition in terms of prior PCR groups. Seven PCR groups were created on a 5-point range starting from 55 to 60 till 85 to 90.

The analysis – in terms of average performance gain – showed conclusive evidence that crack sealing is an effective preventive maintenance technique. The performance can be maximized by treating flexible as well as composite pavements whose PCR is in the range of 66 to 80. It is also interesting to see that performance gain is relatively higher in the case of composite pavements.

ODOT's PCR is a composite index of surface distresses that include cracking and non-cracking distresses such as raveling, rutting, patching, bleeding and many distresses. Crack sealing is an activity performed only at the cracks. This maintenance activity will have little to no effect on the progression of non-cracking distresses. A question arises here about the efficacy of using PCR to evaluate the effectiveness of crack sealing. To address this question, it was decided to isolate cracking distresses and further evaluate the effectiveness of crack sealing on pavement

performance. Based on the suggestion from ODOT engineers, the following five additional performance indicators were created:

1. PCR excluding C/S Deficiency
2. Cracking Distress
3. Cracking Distress excluding Random cracking
4. Cracking Distress including Raveling
5. Potholes + Patching

Interestingly, each analysis indicated a similar trend and reaffirmed the effectiveness of crack sealing of composite pavements with a PCR of 66 to 80.

In summary, the results presented in this study and conclusions made thereof are based on a large amount of data. The 10-year field experiment provided a unique opportunity to investigate the long-term performance of nearly 700 test sections. The field experiment was extensive, well designed, coordinated and documented. The data was analyzed to develop statistically conclusive evidence about the effectiveness of crack sealing on pavement performance and the influence of experimental variables.

As mentioned above, it has been observed in this study that the benefits of crack sealing have resulted in increase in average performance gain and extension of pavement service life. However, the question is how do decision-makers decide – from these two observations – if application of crack seal as a strategy, in concert with time, is cost-effective? The cost analysis of two pavement maintenance treatment alternatives, using a common metric such as the Net Present Value, presented in Section 11, illustrates that crack sealing, as a maintenance strategy, is economically viable for pavements in the prior PCR range of 66-70.

In conclusion, the results of the study highlighted that crack sealing is an effective treatment in general. Regardless of pavement type, aggregate type used in the surface layer, and the prior pavement condition, crack sealing always results in performance gain. However, the maximum performance gain can be attained when the prior PCR is in the range of 66-80, and the cost-effectiveness is achieved when the prior PCR is in the range of 66-70. From the decision-maker's perspective, it becomes difficult to implement the crack sealing program for such a narrow range. On the contrary, while the crack sealing program for the prior PCR range of 66-80 is not entirely cost-effective, it is practically easier to implement the program which also results in performance gain.

13. RECOMMENDATIONS

From a practical point of view, it is hereby recommended that ODOT develops a policy to allow crack sealing as a strategy for pavement preventive maintenance for all pavements in the prior PCR range of 66 to 80.

REFERENCES

1. Rajagopal A.S. and Minkarah, I. A, "Effectiveness of Crack Sealing on Pavement Serviceability and Life", Report No. FHWA/OH-2003/009, Ohio Department of Transportation, June 2003.

AGENDA MEMO
Municipal Services Committee
December 12, 2012

ISSUE STATEMENT

Discussion followed by Recommendation-The Committee is requested to review the revised Ditch Catalogue.

BACKGROUND

Attached is a copy of the Weighted Rating System- labeled as Attachment 1, and the updated Ditch Maintenance Catalogue.

The following storm water ditches will be presented for the 2013/14 Budget:

*Roger Road – Clarendon Hills Road to Plainfield Road - Ditch Rating 49
Proposed Cost Estimate $192,000.00
*Eleanor Place - 69th Street to Holly Avenue - Ditch Rating 66
Proposed Cost Estimate $184,800.00
*Brookbank Road - 69th Street to Holly Avenue - Ditch Rating 53
Proposed Cost Estimate $186,000.00
**Capital Lane – Janet Avenue to Elm Street - Ditch Rating 55
Proposed Cost Estimate $160,000.00
**Oldfield Road - 87th Street/Lemont Road to Washington-Extension of Oldfield Rd-Andrus Rd-Oldfield to City Limits - Ditch Rating 32
Proposed Cost Estimate $395,000.00

*Roads are scheduled to be paved in 2013
**Roads are scheduled to be paved in 2014

STAFF RECOMMENDATION

Staff is requesting funding consideration for the following ditches to be completed in 2013, pending Budget consideration:

Roger Road – Clarendon Hills Road to Plainfield Road
Eleanor Place - 69th Street to Holly Avenue
Brookbank Road - 69th Street to Holly Avenue
Oldfield Road

ALTERNATE CONSIDERATION

As directed by the Municipal Services Committee.

DECISION MODE

Pending discussion, this item will be presented at the upcoming Budget Workshop.

DITCH RATING PROGRAM SUMMARY

Number	ROAD NAME WITH LIMITS	WEIGHT FACTOR	FIELD SCORE	DITCH PROJECT COMPLETED	PROPOSED ROAD PROGRAM
1	**MARION HILLS SOUTH - SUNRISE AVENUE**	**100**	**68**		2019
2	***MARION HILLS NORTH - ELEANOR PLACE****	**100**	**66**	**Proposed**	2013
	*Road designated for resurfacing in 2013				
3	**BROOKHAVEN #1 - GAIL AVENUE**	**100**	**60**		2016
4	**MARION HILLS NORTH - 68TH STREET**	**100**	**57**		2016
5	***MARION HILLS SOUTH - CAPITAL DRIVE***	100	55	**Proposed**	2014
6	***MARION HILLS NORTH - BROOKBANK ROAD****	100	53	**Proposed**	2013
7	MARION HILLS NORTH - 69TH STREET	100	49		2016
8	***MARION HILLS NORTH - ROGER ROAD****	100	49	**Proposed**	2013
9	CLAREFIELD - ALABAMA AVENUE	100	49		2015
10	MARION HILLS SOUTH - 74TH PLACE	100	48		2022
11	PLAINFIELD HIGHLANDS - 73RD STREET	100	48		2021
12	***CARRIAGE HILL - OLDFIELD RD (Frontage 1400')***	100	48	**Proposed**	2014
13	CLAREFIELD - CHESTNUT LN (RICHMOND-ALABAMA)	100	46		2015
14	BROOKHAVEN #1 - BROOKHAVEN AVENUE	100	46		2016
15	PLAINFIELD HIGHLANDS - 72ND STREET	100	45		2018
16	PLAINFIELD HIGHLANDS - TENNESSEE AVENUE	100	45		2020
17	CLAREFIELD - TENNESSEE AVENUE (67TH-CHESTNUT)	100	41		2017
18	MARION HILLS NORTH - CLARENDON HILLS ROAD	100	40		2018
19	MARION HILLS NORTH - IRIS ROAD	100	38		2015
20	MARION HILLS NORTH - PEONY PLACE	100	38		2017
21	MARION HILLS NORTH - HOLLY AVE (Brookbank-High)	100	38		2015
22	CLAREFIELD - 67TH STREET	100	38		2018
23	MARION HILLS SOUTH - CREST ROAD	100	35		2018
24	CARRIAGE HILL -OLDFIELD RD (800')	100	35		2014
25	MARION HILLS NORTH - DALE ROAD	100	34		2018
26	CLAREFIELD - BENTLEY AVENUE (67TH-CHESTNUT)	100	33		2018
27	PLAINFIELD HIGHLANDS - BENTLEY AVE (72ND-73RD)	100	33		2021
28	CARRIAGE HILL -87TH ST (Lemont-Washington)	100	32		2014
29	MARION HILLS SOUTH - ELEANOR PL (JANET-PLAINFIELD)	100	28		2018
30	MARION HILLS SOUTH - ELM STREET	100	20		2017
31	NORTH OF 67TH STREET - BENTLEY AVE	100	20		2015
32	NORTH OF 67TH STREET - WESTERN AVE	100	20		2016
33	BROOKHAVEN #1 - LINDEN AVENUE	100	15	2009	2022
34	CARRIAGE HILL -ANDRUS RD (Frontage to 66)	100	15		2014
35	MARION HILLS SOUTH - JANET AVENUE	100	12	2006	2019
36	NORTH OF 67TH STREET - TENNESSEE AVE	100	11		2020
37	MARION HILLS NORTH - HOLLY AVE (High - Crest)	100	10	2007/2011	2015
38	MARION HILLS SOUTH - ELEANOR PL (ELM-JANET)	100	10	2009	2022
39	CLAREFIELD - WESTERN AVENUE (67TH-CHESTNUT)	100	10	2009	2022
40	CLAREFIELD - LEONARD DRIVE (67TH-CHESTNUT)	100	10	2009	2022

Number	ROAD NAME WITH LIMITS	WEIGHT FACTOR	FIELD SCORE	DITCH PROJECT COMPLETED	PROPOSED ROAD PROGRAM
41	PLAINFIELD HIGHLANDS - LEONARD DRIVE	100	10	2008	2022
42	BROOKHAVEN #1 - WALNUT DR (WARWICK-942)	100	10	2009	2020
43	BROOKHAVEN #1 - JANET AVE (WARWICK-E)	100	10	2008	2021
44	BROOKHAVEN #1 - JANET AVE (GAIL-WARWICK)	100	10	2008	2021
45	BROOKHAVEN #1 - WARWICK DRIVE	100	10	2008	2022
46	MARION HILLS NORTH - CREST ROAD	100	8	2007	2022
47	MARION HILLS SOUTH - BROOKBANK ROAD	100	8	2010	2022
48	MARION HILLS SOUTH - EVANS PLACE	100	8	2010	2023
49	NORTH OF 67TH STREET - RICHMOND AVE	100	8	2010	2023
50	HINSBROOK - 71ST STREET (Richmond-Comm Park)	100	8		2017
51	PLAINFIELD HIGHLANDS - WESTERN AVENUE	100	8	2010	2022
52	BROOKHAVEN #1 - JUNIPER LN (Warwick-E)	100	8	2009	2021
53	PINE PARKWAY -ADAMS ST (dead end)	100	8	2009	2021
54	MARION HILLS SOUTH - ELEANOR PL (74th-Elm Street)	100	7		2021
55	MARION HILLS SOUTH - 75TH ST BASIN (75th-Elm Street)	100	5	2008	N/A
56	CARRIAGE HILL -ANDRUS RD (Oldfield to 66)	100	5		2014
57	DARIEN WOODS -KEARNEY RD	100	0		2016
58	MARION HILLS SOUTH - POPLAR LANE	100	0	2012	2024
59	PLAINFIELD HIGHLANDS - BENTLEY AVE (71ST-72ND)	100	0	2012	2023
60	MARION HILLS NORTH - HIGH ROAD	100	0	2011	2023
61	MARION HILLS SOUTH - HIGH ROAD	100	0	2011	2024

Evaluation completed in November, 2012

2013 DITCH CATALOGUE

12/7/2012

Number	Location	Ditch	Ditch Length (feet)	Total length completed to date	Street Length (feet)	Year Last Street Rehab	Most Recent Ditch Rehab	Ditch Drainage Rating	Road Cond. Rating	Proposed Ditch Rehabilitation / Maint YEAR	Proposed Street Rehabilitation YEAR
I	**Marion Hills North**										
1	Dale Road	yes	1720		860	2003		34	77	2017	2018
2	Iris Road	yes	2480		1240	1999		38	71	2014	2015
3	68th Street	yes	4200		2100	2000		57	73	2015	2016
4	69th Street	yes	4600		2300	2001		49	73	2015	2016
5	Peony Place	yes	1320		660	2002		38	75	2016	2017
6A	Holly Avenue (Brookbank-High)	yes	810		1660	2002		38	71	2014	2015
6B	Holly Avenue (High-Crest)	yes	825	825		2002	2007	10	73	2024	2015
7	Roger Road	yes	2240		1120	1999		49	66	2013	2013
8	Brookbank Road	yes	2300		1150	1997		53	66	2013	2013
9	High Road	yes	5900	5900	2950	2012	2011	0	90	2022	2023
10	Eleanor Place	yes	2100		1050	1997		66	66	2013	2013
11	Crest Road	yes	4400	4400	2200	2008	2007	8	88	2021	2022
12	Clarendon Hills Rd (67th-71st)	yes	5280		2640	2001		40	78	2017	2018
13	Clarendon Hills Rd (71st-75th)	NO			2640	2001			78		2018
	Total Feet		38175	11125							
	Total Ditch Miles		**7.2**	**2.1**							
	Proposed										
	Top 4										

2013 DITCH CATALOGUE

Number	Location	Ditch	Ditch Length (feet)	Total length completed to date	Street Length (feet)	Year Last Street Rehab	Most Recent Ditch Rehab	Ditch Drainage Rating	Road Cond. Rating	Proposed Ditch Rehabilitation / Maint YEAR	Proposed Street Rehabilitation YEAR
II	**Marion Hills South**										
1	Janet Avenue	yes	5600	5600	2800	2006	2006	12	84	2018	2019
2	74th Place	yes	2000	2000	1000	2009	2009	48	88	2021	2022
3	Brookbank Road	yes	1000	1000	500	2010	2010	8	88	2021	2022
4	Evans Place	yes	1320	1320	660	2011	2010	8	89	2022	2023
5	Poplar Lane	yes	1680	1680	840	2012	2012	60	90	2023	2024
6	Eleanor Place (Elm-Janet)	yes	1960	1960	980	2010	2009	10	88	2021	2022
7	Eleanor Place (Janet-Plnfld)	yes	1400		700	2004		28	78	2017	2018
8	Eleanor Place (74th-Elm)	yes	880	880	440	2009	2009	7	87	2020	2021
9	75th street basin (Elm-75th)	yes	1000	1000	N/A	N/A	2008	5	N/A	2020	N/A
10	Sunrise Avenue	yes	1960		980	2007		68	81	2018	2019
11	Capital Drive	yes	1960		980	2002		55	70	2013	2014
12	Crest Road	yes	1840		920	2004		35	78	2017	2018
13	High Road	yes	880	880	440	2012	2011	13	90	2023	2024
14	Elm Street (CHR-83)	yes	5120		2560	2004		20	76	2016	2017
	Total Feet		28600	16320							
	Total Ditch Miles		**5.4**	**3.09**							
	Proposed										
	Top 4										

2013 DITCH CATALOGUE

Number	Location	Ditch	Ditch Length (feet)	Total length completed to date	Street Length (feet)	Year Last Street Rehab	Most Recent Ditch Rehab	Ditch Drainage Rating	Road Cond. Rating	Proposed Ditch Rehabilitation / Maint YEAR	Proposed Street Rehabilitation YEAR
III	**Clarefield**										
1	Alabama Avenue	yes	2186		1093	2000		49	73	2014	2015
2	Tennessee Ave	yes	2186		1093	2000		41	75	2016	2017
3	Bentley Ave	yes	2186		1093	2000		33	77	2017	2018
4	Western Ave	yes	2186	2186	1093	1984	2009	10	89	2021	2022
5	Leonard Drive	yes	2186	2186	1093	1984	2009	10	89	2021	2022
6	Chestnut Ln (Rich-Alabama)	yes	4600		2300	2000		46	72	2015	2016
7	67th Street	yes	10560	700	5280	2007	partial 2005	38	78	2017	2018
	Total Feet		26090	5072							
	Total Ditch Miles		**4.9**	**0.96**							

2013 DITCH CATALOGUE

Number	Location	Ditch	Ditch Length (feet)	Total length completed to date	Street Length (feet)	Year Last Street Rehab	Most Recent Ditch Rehab	Ditch Drainage Rating	Road Cond. Rating	Proposed Ditch Rehabilitation / Maint YEAR	Proposed Street Rehabilitation YEAR
VI	**North of 67th St**										
1	Tennessee Ave	partial	760		760	2007		11	85	2019	2020
2	Bentley Ave	yes	1300		650	2003		20	72	2014	2015
3	Western Ave	partial	340		340	2004		20	73	2015	2016
4	Richmond Ave	yes	794		397	1996	2010	8	89	2022	2023
	Total Feet		3194	0							
	Total Ditch Miles		**0.6**	**0.0**							

2013 DITCH CATALOGUE

Number	Location	Ditch	Ditch Length (feet)	Total length completed to date	Street Length (feet)	Year Last Street Rehab	Recent Ditch Rehab	Ditch Drainage Rating	Road Cond. Rating
VII	**Hinsbrook**								
1	71st Street (Rich-Comm Park)	yes	2000	0	5280		2002	8	75
	Total Feet		2000	0					
	Total Ditch Miles		**0.4**	**0.0**					

2013 DITCH CATALOGUE

Number	Location	Ditch	Ditch Length (feet)	Total length completed to date	Street Length (feet)	Year Last Street Rehab	Most Recent Ditch Rehab	Ditch Drainage Rating	Road Cond. Rating	Proposed Ditch Rehabilitation / Maint YEAR	Proposed Street Rehabilitation YEAR
VIII	**Plainfield Highlands**										
1	72nd Street	yes	4000		2000	2005		45	76	2017	2018
2	Bentley Ave (71st-72nd)	yes	960	960	480	2012	2012	36	90	2022	2023
3	Bentley Ave (72nd-73rd)	yes	1200		600	2008		33	85	2020	2021
4	73rd Street	yes	900		450	2008		48	86	2020	2021
5	Tennessee Avenue	yes	1960		980	2007		45	83	2019	2020
6	Western Avenue	yes	2840	2840	1420	2011	2010	8	89	2021	2022
7	Leonard Drive	yes	3320	3320	1660	2009	2008	10	88	2021	2022
	Total Feet		15180	7120							
	Total Ditch Miles		**2.88**	**1.3**							

2013 DITCH CATALOGUE

Number	Location	Ditch	Ditch Length (feet)	Total length completed to date	Street Length (feet)	Year Last Street Rehab	Most Recent Ditch Rehab	Ditch Drainage Rating	Road Cond. Rating
XIII	**Brookhaven #1**								
1	Juniper Ln (Warwick-E)	yes	600	600	300	2009	2009	8	87
2	Juniper Ln (Stratford-W)	NO		N/A	180	2009	N/A		87
3	Walnut Dr (Warwick-942)	yes	400		200	2006	2009	10	
4	Brookhaven Avenue	yes	2640		1320	2005		46	74
5	Janet Ave (Warwick-E)	yes	1120	1120	560	2009	2008	10	87
6	Janet Ave (Gail-Warwick)	yes	840	840	420	2009	2008	10	87
7	Linden Avenue	yes	2840	2840	1420	1983	2009	15	88
8	Gail Avenue	yes	2480		1240	2005		60	73
9	Warwick Dr	yes	3800	3800	1900	2009	2008	10	87
	Total Feet		14720	9200					
	Total Ditch Miles		**2.8**	**1.7**					
	Proposed								
	Top 4								

2013 DITCH CATALOGUE

Number	Location	Ditch	Ditch Length (feet)	Total length completed to date	Street Length (feet)	Year Last Street Rehab	Most Recent Ditch Rehab	Ditch Drainage Rating	Road Cond. Rating	Proposed Ditch Rehabilitation / Maint YEAR	Proposed Street Rehabilitation YEAR
XXII	**Carriage Hill**										
1	Oldfield Rd (Frontage 1400')	yes	2800		1400	2004		48	69	2013	2014
2	Oldfield Rd (675')	NO				2004			69	N/A	
3	Oldfield Rd (800')	yes	1600		800	2004		35	69	2013	2014
4	87th St (Lemont-Washington)	yes	4500		2250	2002		32	70	2013	2014
5	Andrus Rd (Frontage to 66)	yes	400		200	2004		15	73	2013	2014
6	Andrus Rd (Oldfield to 66)	yes	600		300	2000		5	70	2013	2014
	Total Feet		9900	0							
	Total Ditch Miles		**1.9**	**0.0**							
	Proposed										
	Top 4										

2013 DITCH CATALOGUE

Number	Location	Ditch	Ditch Length (feet)	Total length completed to date	Street Length (feet)	Year Last Street Rehab	Most Recent Ditch Rehab	Ditch Drainage Rating	Road Cond. Rating	Proposed Ditch Rehabilitation / Maint YEAR	Proposed Street Rehabilitation YEAR
XXXV	**Pine Parkway**										
1	Adams St (dead end)	yes	1680	1680	840	2009	2009	8	87	2020	2021
	Total Feet		1680	1680							
	Total Ditch Miles		**0.3**	**0.3**							

2013 DITCH CATALOGUE

Number	Location	Ditch	Ditch Length (feet)	Total length completed to date	Street Length (feet)	Year Last Street Rehab	Most Recent Ditch Rehab	Ditch Drainage Rating	Road Cond. Rating	Proposed Ditch Rehabilitation / Maint YEAR	Proposed Street Rehabilitation YEAR
XXXVIII	**Darien Woods**										
1	Kearney Rd	partial	600		600	1998		0	73	2015	2016
	Total Feet		600	0							
	Total Ditch Miles		**0.1**	**0.0**							

SUMMARY SHEET											
PAGE NO.	SUBDIVSION	TOTAL APPROX CITY LINEAL DITCH MILES	TOTAL LENGTH COMPLETED TO DATE	2006	2007	2008	2009	2010	2011	2012	2013
D1	Marion Hills North	7.23	2.11		1.00				1.10		
D2	Marion Hills South	5.42	3.09	1.06		0.19	0.92	0.44	0.16	0.32	
D3	Clarefield	4.94	0.96	0.13			0.82				
D4	North of 67th Street	0.60	0.00					0.15			
D5	Hinsbrook	0.38	0.00								
D6	Plainfield Highlands	2.88	1.35			0.63		0.54		0.18	
D7	Brookhaven 1	2.79	1.74			1.09	0.65				
D8	Carriage Hill	1.88	0.00								
D9	Pine Parkway	0.32	0.32				0.32				
D10	Darien Wood	0.1	0.00								
	TOTAL MILES	26.54	9.57	1.19	1.00	1.91	2.71	1.13	1.26	0.50	0.00
	PERCENT COMPLETED	0.36									
			16.97	117.00	59.00						
			10,485,774.00								
			5,287,698.00								
			18.01	120.00	65.00						

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
I	**Marion Hills North**																			
1	Dale Road	NA/2/1.5	1940	860	18	1720	2003	EG, FM, LB, OL	77	2018	None								2011	2014
2	Iris Road	NA/2/1.5	1940	1240	18	2480	1999	EG, FM, LB, OL	70	2015	None									
3	68th Street	NA/2/1.5	1940	2100	18	4200	2000	EG, FM, LB, OL	72	2015	None									
4	69th Street	NA/2/1.5	1940	2300	18	4600	2001	EG, FM, LB, OL	73	2016	None								2006	
5	Peony Place	NA/2/1.5	1940	660	18	1320	2002	EG, FM, LB, OL	75	2017	None								2010	
6	Holly Avenue	NA/2/1.5	1940	1660	18	3320	2002	EG, FM, LB, OL	73	2016	None								2010	
7	Roger Road	NA/2/1.5	1940	1120	18	2240	1999	EG,LB, OL	66	2013	TG,BR,FM,LB,OL	1120	100.0	201.6	2240	2240	100.8			
8	Brookbank Avenue	NA/2/1.5	1940	1150	18	2300	1997	EG,LB, OL	66	2013	TG,BR,FM,LB,OL	1150	200.0	207	2300	2300	103.5			
9	High Road	NA/2/1.5	1940	2950	18	5900	2012	EG,LB, OL	90	2024	None									
10	Eleanor Place	NA/2/1.5	1940	1050	18	2100	1997	EG,LB, OL	66	2013	TG,BR,FM,LB,OL	1050	100.0	189	2100	2100	94.5			
11	Crest Road	6/1/1.5	1940	2200	20	4889	2008	TG,BR,FM,LB,OL	88	2023	None								2011	2014
12	Clarendon Hills Rd (67th-71st)	NA/3/2	1940	2640	22	6453	2001	EG, FM, LB, OL	76	2017	None								2007	
13	Clarendon Hills Rd (71st-75th)	NA/3/2	1940	2640	36	10560	2001	EG, FM, LB, OL	75	2017	None								2007	
	TOTAL			22,570.00								3,320.00	400.00	597.60	6,640.00	6,640.00	298.80	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED
II	**Marion Hills South**																		
1	Janet Avenue	NA/2/1.5	1940	2800	18	5600	2006	TG,OL,FM	84	2020	None								2009
2	74th Place	5/1.5/1.5	1940	1000	18	2000	2009	TG,BR,FM,LB,OL	88	2023	None								
3	Brookbank Road	4/2/1.5	1940	600	19	1267	2010	TG,BR,FM,LB,OL	88	2023	CF							700	
4	Evans Place	NA/2/1.5	1940	660	18	1320	2011	TG,BR,FM,LB,OL	89	2023	None								
5	Poplar Lane	NA/2/1.5	1940	840	18	1680	2012	EG,OL	90	2024	None								
6	Eleanor Place (Elm-Janet)	3.2/2.5/1.5	1940	980	18	1960	2010	TG,BR,FM,LB,OL	88	2023	CF							1000	
7	Eleanor Place (Janet-Plnfld)	NA/2/1.5	1940	700	18	1400	2004	EG,OL,FM	78	2018	None								
8	Eleanor Place (74th-Elm)	7/2/1.5	1940	440	18	880	2009	TG,BR,FM,LB,OL	87	2021	None								
9	Sunrise Avenue	NA/2/1.5	1940	980	18	1960	2007	OL,FM	81	2019	CF								
10	Capital Drive	NA/2/1.5	1940	980	18	1960	2002	EG,OL,FM	70	2015	None								2007
11	Crest Road	NA/2/1.5	1940	920	18	1840	2004	EG,OL	78	2018	None								
12	High Road	NA/2/1.5	1940	440	18	880	2012	TG,BR,FM,LB,OL	90	2024	None								
13	Elm Street (CH-Evans)	NA/2/1.5	1940	760	20	1689	2004	EG,OL,FM	76	2017	None								2011
14	Elm Street (Evans-Rt 83)	NA/2/1.5	1940	1800	18	3600	2004	EG,OL,FM	76	2017	None								2011
	TOTAL			13,900.00								0.00	0.00	0.00	0.00	0.00	0.00	1,700.00	

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
III	**Clarefield**																			
1	Alabama Avenue	NA/2/1.5	1940	1093	18	2186	2000	EG,OL,FM	72	2015	None									
2A	Tennessee Ave	NA/2/1.5	1940	1093	18	2186	2000	EG,BR,FM,LB,OL	75	2017	None									
3	Bentley Ave	NA/2/1.5	1940	1093	18	2186	2000	EG,OL,FM	77	2018	None									
4	Western Ave	6/2/1.5	1940	1093	19	2307	2010	TG,BR,OL,EG,FM	89	2023	CF							2500		2012
5	Leonard Drive	8/4/1.5	1940	1093	19	2307	2010	TG,BR,OL,EG,FM	89	2023	CF							1500		2013
6	Chestnut Ln (Rich-Alabama)	NA/2/1.5	1940	2300	18	4600	2000	EG,OL,FM	72	2015	None									
7	67th Street	NA/2/1.5	1940	5280	20	11733	2007	TG,BR,OL,EG,FM	78	2018	CF							6500	2010	2013
	TOTAL			13,045.00								0.00	0.00	0.00	0.00	0.00	0.00	10,500.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED
IV	**Farmingdale Heights**																		
1	Trenton Lane	8/1/1.5	1976	530	30	1767	2009	TG,BR,FM,LB,OL	87	2021	None								2012
2	Albany Lane	8/1/1.5	1976	350	30	1167	2009	TG,BR,FM,LB,OL	87	2021	None								2012
3	Columbia Lane	8/1.7/1.5	1976	650	30	2167	2010	TG,OL,LB	88	2023	CF								
4	Charleston Drive	8/1.5/1.5	1976	1210	30	4033	2007	BR,OL,EG,FM,TG	85	2021	None								2010
5	Chestnut Ln (Rich-Charls)	8/1/1.5	1976	676	30	2253	2008	TG,BR,FM,LB,OL	85	2021	None							1014	2011
	TOTAL			3,416.00								0.00	0.00	0.00	0.00	0.00	0.00	1,014.00	

	Crackfill
	Year
Number	PROPOSED
IV	
1	
2	
3	
4	2013
5	2014

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
V	**Woodlands of Darien**																			
1	Tall Pines Dr (Cass-East N)	9/1.5/1.5	1986	435	25	1208	2008	TG,BR,FM,LB,OL	86	2021	None								2011	2014
2	Tall Pines Dr (Cass-East S)	9/1.5/1.5	1986	435	15	725	2008	TG,BR,FM,LB,OL	86	2021	None								2011	2014
3	Tall Pines Dr (East)	9/1.5/1.5	1986	1521	30	5070	2008	TG,BR,FM,LB,OL	86	2021	None								2011	2014
4	Bavarian Ln	9/1.5/1.5	1986	780	30	2600	2008	TG,BR,FM,LB,OL	85	2021	None								2011	2014
	TOTAL			3,171								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

Number	Location	Composition Aggr./Bind./Surf. (inches)	Year Const.	Pvmnt. Length (feet)	Pvmnt. Width (feet)	Square Yards	Most Recent Rehab.	Description of Work	Cond. Rating	Proposed Rehabilitation *YEAR*	Recommended Rehabilitation *2013*	PROPOSED LINEAL FEET	OL (tons)	FM (sq. yds)	Mill (sq. yds)	LB (tons)	Crackfill PROPOSED (LF)	Crackfill Year COMPLETED	Crackfill Year PROPOSED
VI	North of 67th St																		
1	Tennessee Ave	NA/1.5/1.5	1940	760	27	2280	2007	EG,OL,FM,BR,LB	85	2020	CF						1000	2010	2013
2	Easy St	11/1.5/1.5	1986	222	28	691	2007	TG,OLFM,LB	85	2020	CF						500	2010	2013
3	High Ridge Ct	9/1.5/1.5	1995	600	27	1800	2011	New Cons.	89	2023	None								
4	Windmere Ct	8/2/1.5	1996	570	27	1710	2000	New Cons.	73	2016	None								
5	Sean Circle	8/2/1.5	2002	850	30	2833	2003	New Cons.	70	2015	None							2011	
6	Bentley Ave	NA/1.5/1.5	1940	650	17	1228	2003	EG,OL,FM,LB	73	2016	None							2011	
7	Ridge Rd	8/2/1.5	2002	650	20	1444	2002	EG,OL,FM,LB	75	2017	None							2010	
8	Western Ave	NA/1.5/1.5	1940	500	27	1500	2004	EG,OL,FM,LB	74	2016	None								
9	Richmond Ave	NA/1.5/1.5	1940	400	19	844	2011	TG,OL,FM,LB	89	2023	None								
	TOTAL			5,202								0.00	0.00	0.00	0.00	0.00	1,500.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
VII	Hinsbrook																			
1	69th Street	8/2/4	1966	5280	28	16427	2011	EG,BR,OL,LB	89	2023	None									2014
2	70th Street	8/2/4	1967	2760	28	8587	2011	EG,OL,LB	89	2023	None									2014
3	Richmond Ave (69th-67th)	8/2/4	1967	1500	37	6167	2006	EG,OL,LB,FM	80	2019	None								2012	
4	Richmond Ave (69th-72nd)	8/2/4	1966	1680	37	6907	2006	EG,OL,LB,FM	80	2019	None								2012	
5	Richmond Ave (72nd-Seminole	8/2/4	1966	1960	28	6098	2003	EG,OL,LB,FM	80	2019	None								2011	
6	Maple Ln	8/2/4	1967	2840	28	8836	2012	TG,LB,FM,OL	90	2024	None									2015
7	71st Street	8/2/4	1966	5280	37	21707	2002	EG,OL,LB,FM	74	2016	None								2010	
8	Sierra Drive	8/1/1.5	1966	1350	28	4200	2008	TG,BR,FM,LB,OL	87	2021	None								2011	
9	Sierra Court	8/1/1.5	1966	300	40	1333	2008	TG,BR,FM,LB,OL	87	2021	None								2011	
10	Ironwood Ave (Seminole-69th)	8/2/4	1966	1025	28	3189	2006	EG,OL,LB,FM	80	2019	None								2012	
11	Ironwood Ave (Beechnut-Semir	8/2/4	1966	1075	28	3344	2006	EG,OL,LB,FM	74	2016	None								2012	
12	Wilmette Ave (69th-67th)	8/2/4	1966	1442	30	4807	2004	EG,OL,LB,FM	77	2018	None									
13	Wilmette Ave (69th-Hinsbrk)	8/2/4	1966	660	28	2053	2004	EG,OL,LB,FM	77	2018	None									
14	Hinsbrook Avenue	8/2/4	1966	1450	37	5961	2006	TG,OL,FM,LB	84	2020	None									
15	Beechnut Lane	8/2/4	1966	1750	28	5444	2006	TG,OL,FM,LB	83	2020	None									
16	Seminole Drive	8/2/4	1966	3200	37	13156	2005	EG,OL,BR,FM,LB	75	2017	None									
17	Seminole Drive (CDS)	8/2/4	1966	240	40	1067	2009	TG,OL,FM,LB	88	2023	None									
18	Tamarack Drive	8/2/4	1966	2200	28	6844	2012	TG,OL,LB	90	2024	None									
19	Belair Drive	8/2/4	1966	2200	28	6844	2009	TG,B,OL	87	2021	None								2012	
20	Belair Dr (CDS)	8/2/4	1966	160	50	889	2009	TG,FM,OL,LB	87	2021	None								2012	
21	Willow Lane	8/2/4	1966	900	28	2800	2003	EG,OL,LB,FM	80	2019	None								2011	
22	Bunker Road	8/2.5/1.5	1966	1000	27	3000	2008	TG,BR,FM,LB,OL	88	2023	None									
23	Timber Ln (Cass--Darien Ln)	8/2/4	1966	920	28	2862	2004	EG,OL,LB,FM	76	2017	None									
24	Timber Ln (Darien Ln-Richmon	8/2/4	1966	1760	28	5476	2007	EG,OL,LB,FM	85	2021	CF							2000	2010	2013
25	Bentley Ave (69th-71st)	8/2/4	1967	1360	28	4231	2001	EG,OL,LB,FM	72	2015	None								2006	
26	Cherokee Dr	8/2/4	1966	1300	28	4044	2000	EG,OL,LB,FM	73	2016	None									
27	Village Court	8/2/4	1966	500	28	1556	2009	TG,B,OL	88	2023	None								2012	
28	Darien Lane	8/2/4	1966	1060	28	3298	2011	TG,LB,FM,OL	89	2023	None									
29	Hickory Lane	8/2/4	1966	1080	28	3360	2007	EG,OL,LB,FM	85	2021	CF							1500	2010	2013
30	70th Street (CDS #1)	8/2/4	1967	180	50	1000	2011	EG,OL,LB	89	2023	None									
31	70th Street (CDS #2)	8/2/4	1967	180	50	1000	2011	EG,OL,LB	89	2023	None									
32	70th Street (CDS #3)	8/2/4	1967	180	50	1000	2011	EG,OL,LB	89	2023	None									
33	Maple Lane (CDS #1)	8/2/4	1967	180	50	1000	2012	TG,LB,FM,OL	90	2024	None									
34	Maple Lane (CDS #2)	8/2/4	1967	180	50	1000	2012	TG,LB,FM,OL	90	2024	None									
35	James Peter Ct	8/2/	2006	340	31	1171	2010	BR,OL	88	2023	CF							500		2013
	TOTAL			49,472.00								0.00	0.00	0.00	0.00	0.00	0.00	4,000.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
VIII	Plainfield Highlands																			
1	72nd Street	NA/1.5/1.5	1940	2000	18	4000	2005	EG,BR,OL,FM,LB	77	2018	None									
2	Bentley Ave (71st-72nd)	NA/1.5/1.5	1940	480	20	1067	2012	TG,BR,B,OL	90	2024	None									
3	Bentley Ave (72nd-73rd)	NA/1.5/1.5	1940	600	20	1333	2008	TG,BR,FM,LB,OL	85	2021	None								2011	
4	73rd Street	NA/1.5/1.5	1940	450	20	1000	2008	TG,BR,FM,LB,OL	86	2021	None								2011	
5	Tennessee Avenue	NA/1.5/1.5	1940	980	18	1960	2007	EG, OL,LB,FM	83	2020	CF							1500	2010	2013
6	Western Avenue	NA/1.5/1.5	1940	1420	18	2840	2011	TG,FM,OL,LB	89	2023	None									
7	Leonard Drive	8/1.5/1.5	1940	1660	18	3320	2009	TG,FM,OL,LB	88	2023	None								2012	
	TOTAL			7,590.00								0.00	0.00	0.00	0.00	0.00	0.00	1,500.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
IX	**Farmingdale Terrace North**																			
1	Farmingdale Dr (S-Walnut)	8/2/1.5	1971	600	24	1600	2006	EG,OL,LB,FM	80	2019	None								2012	
2	Farmingdale Dr (Walnut-N)	8/2/1.5	1971	600	24	1600	2006	EG,OL,LB,FM	83	2020	None								2012	
3	Farmingdale Dr (Walnut-79th)	8/2/1.5	1971	1900	28	5911	2006	EG,OL,LB,FM	80	2019	None								2012	
4	Chippewa Lane	8/2/1.5	1971	400	28	1244	2007	TG, OL,LB,FM	84	2020	CF								2010	2013
5	Sawyer Rd (Chippewa-Honey)	8/2/1.5	1971	1400	28	4356	2004	EG,OL,LB,FM	74	2016	None									
6	Pine Tree Ln	8/2/1.5	1971	160	28	498	2004	EG,OL,LB,FM	84	2020	None									
7	Honey Locust Ln	8/2.5/1.5	1971	480	28	1493	2009	TG,B,OL	87	2021	None								2012	
8	Dorchester Ln	8/2/1.5	1994	615	28	1913	1997	EG,OL,LB	66	2013	TG, OL,LB,FM	615	100.0	172.2	1913	1913	86.1			
9	Somerset Ln	8/2/1.5	1994	335	28	1042	1997	EG,OL,LB	66	2013	TG, OL,LB,FM	335	100.0	93.8	1042	1042	46.9			
10	Mayfair Ln	8/2/1.5	1994	615	28	1913	1997	EG,OL,LB	66	2013	TG, OL,LB,FM	615	150.0	172.2	1913	1913	86.1			
11	Nantucket Drive	12/2/1.5	1971	2600	37	10689	2010	TG, OL,LB,FM	88	2023	CF									2013
	TOTAL			9,705.00								1,565.00	350.00	438.20	4,868.89	4,868.89	219.10	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
X	**Farmingdale Terrace South**																			
1	Sawyer Rd (79th-Portsmth)	8/2/1.5	1971	2700	28	8400	1998	EG,OL,LB	71	2015	NONE									
2	Sawyer Court	8/1/1.5	1971	200	28	622	2008	TG,BR,FM,LB,OL	86	2021	NONE								2011	
3	Glen Lane	8/2/1.5	1971	1150	28	3578	2007	TG,OL,LB,FM	85	2021	CF							1500	2010	2013
4	Portsmouth Drive	8/2/1.5	1971	2100	28	6533	2003	EG,BR,OL,LB,FM	75	2017	NONE								2011	
5	Arrow Lane	8/2/1.5	1971	600	28	1867	2012	TG,B,OL	90	2024	NONE									
6	Woodland Drive	8/2/1.5	1981	700	30	2333	2000	EG,OL,LB	73	2016	NONE									
7	Farmingdale Dr (Glen-Portsmo	8/2/1.5	1971	1840	28	5724	2002	EG,OL,LB	71	2015	patching							2500	2010	2013
8	Wittington Ct	8/1/1.5	1993	345	28	1073	2008	TG,BR,FM,LB,OL	86	2021	NONE								2011	
XI	**High Point Circle**																			
1	High Point Circle	8/2/1.5	1988	1050	30	3500	2003	EG,OL,LB,FM	76	2017	None								2011	2014
	TOTAL			10,685.00								0.00	0.00	0.00	0.00	0.00	0.00	4,000.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XII	Farmingdale Terrace West																			
1	Comstock Lane	8/2/1.5	1971	900	28	2800	2012	TG,OL,LB	90	2024	None									2015
2	Walnut Dr (942-Farmingdale)	8/2/1.5	1971	1100	28	3422	2006	EG,OL,LB,FM	81	2019	None								2011	2014
3	Hayenga Lane	8/2/1.5	1971	980	28	3049	2012	TG,OL,LB	90	2024	None									2015
4	Andermann Lane	8/2/1.5	1971	660	28	2053	2012	TG,OL,LB	90	2024	None									2015
5	Baker Court	8/2/1.5	1971	640	28	1991	2012	TG,OL,B	90	2024	None									2015
6	Del Court	8/2/1.5	1971	400	28	1244	2012	TG,B,OL	90	2024	None									2015
																				2015
	TOTAL			4,680.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XIII	Brookhaven #1																			
1	Stratford Place	12/1..5/1.5	1971	1800	28	5600	2010	TG,BR,FM,LB,OL	88	2022	CF							2000		2013
2	Juniper Ln (Warwick-E)	10/2.5/1.5	1940	300	18	600	2009	TG,B,OL,PGE	87	2021	None								2012	
3	Juniper Ln (Stratford-W)	12/2.5/1.5	1940	180	28	560	2009	TG,B,OL	87	2021	None								2012	
4	Walnut Dr (Warwick-942)	NA/1.5/1.5	1940	200	18	400	2006	EG,OL,LB,FM	83	2020	None									
5	Brookhaven Avenue	NA/1.5/1.5	1940	1320	18	2640	2005	EG,OL,LB,FM	74	2016	None									
6	Janet Ave (Warwick-E)	NA/1/1.5	1940	560	20	1244	2009	TG,OL,LB,FM	87	2021	None								2012	
7	Janet Ave (Gail-Warwick)	NA/2.5/1.5	1940	420	20	933	2009	TG,OL,B,BR	87	2021	None								2012	
8	Linden Avenue	10/0/1.5	1940	1420	18	2840	2010	TG,BR,FM,LB,OL	88	2023	None									
9	Gail Avenue	NA/1.5/1.5	1940	1240	18	2480	2005	EG,OL,LB,FM	73	2016	None									
10	79th St (Cass-Sawyer)	NA/1.5/1.5	1940	4160	37	17102	2002	EG,OL,LB,FM,BR	76	2017	None								2012	
11	Country Lane	8/1/1.5	1968	1200	28	3733	2007	TG,OL,LB,FM	87	2021	CF							1500	2010	2013
12	Warwick Dr	5/2/1.5	1940	1900	20	4222	2009	TG,OL,LB,BR,FM	88	2023	None								2012	
13	Concord Dr (Cass -Chalet)	8/2.5/1.5	1968	250	48	1333	2009	TG,B,OL	87	2021	None								2012	
14	Concord Dr (Chalet-Limit)	8/2.5/1.5	1968	300	28	933	2009	TG,B,OL	87	2021	None								2012	
15	Chalet Dr	8/2.5/1.5	1968	600	30	2000	2009	TG,FM,LB,OL	87	2021	None								2012	
	TOTAL			15,850.00								0.00	0.00	0.00	0.00	0.00	0.00	3,500.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XIV	Darien Club																			
1	Darien Club Drive	9/1.5/1.5	1989	5920	27	17760	2008	TG,BR,FM,LB,OL	86	2021	None								2011	2014
2	Clare Court	9/1.5/1.5	1992	360	28	1120	2012	TG,BR,B,OL	90	2024	None									
3	Bantry Ct	9/1.5/1.5	1992	200	27	600	2012	TG,BR,B,OL	90	2024	None									2014
4	Galway Ct	9/1.5/1.5	1989	480	28	1493	2011	TG,BR,B,OL	89	2023	None									2014
5	Limerick Ct	9/1.5/1.5	1989	600	28	1867	2011	TG,BR,FM,LB,OL	89	2023	None									
6	Clover Ct	9/1.5/1.5	1989	350	28	1089	2012	NEW CONS	90	2024	None									
7	Irish Ct	9/1.5/1.5	1989	350	28	1089	2012	TG,BR,FM,LB,OL	90	2024	None									
8	Sweetbriar Ln	9/2.5/1.5	1989	2000	30	6667	2008	TG,BR,FM,LB,OL	87	2021	None									
9	Discosola Ct	9/1.5/1.5	2004	350	27	1050	2004	NEW CONS	77	2018	None								2011	2014
10	Kelly Ct	9/1.5/1.5	1994	650	28	2022	2011	TG,BR,FM,LB,OL	88	2023	None									2014
11	Allison Ln	9/1.5/1.5	1989	335	30	1117	2012	TG,B,OL	90	2024	None									
12	Exner Rd (DC-Holly)	9/1.5/1.5	1992	465	37	1912	2006	TG,BR,FM,LB,OL	83	2020	None									
13	Hudson St	8/1.5/1.5	1970	580	28	1804	2000	EG,OL,	78	2018	None									
		2021																		
	TOTAL			12,640.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XV	Farmingdale Unit 5, 6, 7, 8, 9																			
1	71st St (Washington-1722)	8/1.5/1.5	1975	2500	37	10278	2005	EG,OL,LB,FM,BR	75	2017	NONE									
2	71st St (1722-West)	8/1.5/1.5	1975	1340	27	4020	2005	EG,OL,LB,FM,BR	76	2017	NONE									
3	Wilcox Avenue	8/1.5/1.5	1972	625	28	1944	1998	EG,OL,LB	67	2013	TG, OL,LB,FM	625	100.0	175	1944	1944	87.5			
4	Holly Av	8/1.5/1.5	1968	3300	28	10267	2006	EG,OL,LB,FM	80	2019	NONE								2012	
5	McAdam Rd	8/1.5/1.5	1972	980	28	3049	1994	EG,OL,LB	67	2013	TG, OL,LB,FM	980	100.0	274.4	3049	3049	137.2			
6	Exner Rd (Holly-71st)	8/1.5/1.5	1972	850	37	3494	2006	EG,OL,LB,FM	83	2020	NONE								2012	
7	Exner Rd (71st-75th)	8/1.5/1.5	1975	3000	37	12333	2006	EG,OL,LB,FM	83	2020	NONE								2012	
8	Claremont Dr	8/1.5/1.5	1968	1232	28	3833	2007	EG,OL,LB	86	2021	CF								2010	2013
9	Emerson Dr	8/2.5/1.5	1972	1460	28	4542	2009	TG,B,OL	87	2021	NONE								2012	
10	Whittier Dr	8/1/1.5	1972	660	28	2053	2009	TG,OL,LB	87	2021	NONE								2012	
11	73rd St	8/1.5/1.5	1972	1830	28	5693	2002	EG,OL,LB,FM	73	2016	NONE							2500	2010	2013
12	Park Ave	8/1.5/1.5	1972	1200	28	3733	2005	EG,OL,LB,FM	78	2018	NONE									
13	Shelley Ct	8/1.5/1.5	1972	450	28	1400	2005	EG,OL,LB,FM	79	2019	NONE									
14	Carrol Ct	8/1.5/1.5	1972	450	28	1400	2005	EG,OL,LB,FM	80	2019	NONE									
15	Adams	8/1.5/1.5	1967	600	28	1867	2007	EG,OL,LB,FM	86	2021	CF							800	2010	2013
16	Exner Ct	8/1.5/1.5	1975	160	28	498	2012	TG,OL,LB,FM	90	2024	NONE									
17	Arbor Ct	8/1.5/1.5	1975	340	28	1058	2007	EG,OL,LB,FM	85	2021	CF							500	2010	2013
18	Bayberry Ln	8/1.5/1.5	1975	1160	30	3867	2008	EG,OL,LB	87	2021	NONE								2011	
19	Clemens Rd	8/1.5/1.5	1975	1120	28	3484	2007	EG,OL,LB,FM	85	2021	CF							1500	2010	2013
20	Carrol Ln	8/1.5/1.5	1972	200	28	622	1994	TG,OL,LB,FM	70	2015	NONE									
21	Summit Rd	8/1.5/1.5	1975	2240	28	6969	2006	EG,OL,LB,FM	83	2020	NONE								2012	
22	Walden Ln	8/2.5/1.5	1975	1320	30	4400	2008	TG,B,OL	87	2021	NONE								2011	
23	Williams St (Holly-Claremont)	8/1.5/1.5	1968	280	28	871	2010	TG,OL,LB,FM	88	2023	CF							400		2013
	TOTAL			27,297								1,605.00	200.00	449.40	4,993.33	4,993.33	224.70	5,700.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XVI	Downers Fairview																			
1	Wirth Ln	8/1.5/1.5	1968	1460	27	4380	2000	EG,OL,LB,FM	70	2015	NONE									
2	Gigi Ln	8/1.5/1.5	1968	2300	36	9200	2001	EG,OL,LB,FM	73	2016	NONE								2006	
3	Richard Rd	8/1.5/1.5	1968	720	27	2160	1999	EG,OL,LB	67	2013	TG, OL,LB,FM	720	100.0	194.4	2160	2160	97.2			
4	72nd St	8/1.5/1.5	1968	800	27	2400	2011	EG,OL,LB	89	2023	NONE									
5	Gold Grove Dr	8/1.5/1.5	1968	1160	27	3480	2005	EG,OL,LB,FM	75	2017	NONE									
6	Howdy Ln	8/1.5/1.5	1968	540	27	1620	1997	EG,OL,LB	67	2013	TG, OL,LB,FM	540	50.0	145.8	1620	1620	72.9			
	TOTAL			6,980.00								1,260.00	150.00	340.20	3,780.00	3,780.00	170.10	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XVII	Brookhaven #2																			
1	Grant St	8/2.5/1.5	1950	1000	30	3333	2008	TG,BR,FM,LB,OL	86	2021	NONE								2011	
2	Adams St(75th to plainfield)	8/1.5/1.5	1950	1300	28	4044	2002	EG,BR,OL,LB,FM	74	2016	NONE							2000	2010	2013
3	77th St (Knott-Wlms)	8/1.5/1.5	1950	400	28	1244	2000	EG,OL,BL,FM	77	2018	NONE									
4	77th St (Wlms-Adams)	8/1.5/1.5	1950	1500	28	4667	2010	TG,OL,B	88	2023	CF							2000		2013
5	Sequoia Ln	8/1.5/1.5	1950	1500	28	4667	2004	EG,OL,LB,FM	75	2017	NONE								2012	
6	Hawthorne Pl	8/1.5/1.5	1974	330	28	1027	2005	EG,OL,LB,FM	82	2020	NONE									
7	Stevens St	8/1.5/1.5	1974	540	28	1680	2005	EG,OL,LB,FM	80	2019	NONE									
8	Williams St (1-77th-2-77th)	8/2/1.5	1966	350	37	1439	2004	EG,OL,LB,FM	80	2019	NONE								2012	
9	Williams St (7612)	8/2/1.5	1966	75	37	308	2004	EG,OL,LB,FM	80	2019	NONE								2012	
10	Williams (7520)	8/2/1.5	1966	75	20	167	2004	EG,OL,LB,FM	80	2019	NONE								2012	
11	Williams (1 Elizabeth)	8/2/1.5	1966	210	20	467	2004	EG,OL,LB,FM	80	2019	NONE								2012	
	Norman Court																			
7	Norman Drive	8/1.5/1.5	1989	1470	27	4410	2008	TG,BR,FM,LB,OL	86	2021	NONE								2011	
	Brittany Court	8/1.5/1.5	1989	530	27	1590	1992	New Const	69	2014	NONE									
	Coventry Court	8/1.5/1.5	1989	640	27	1920	1992	New Const	69	2014	NONE									
	Canterbury Court	8/1.5/1.5	1989	395	27	1185	1992	New Const	69	2014	NONE									
	TOTAL			10,315.00								0.00	0.00	0.00	0.00	0.00	0.00	4,000.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XVIII	Knottingham																			
1	Florence Ave	8/1.5/1.5	1956	1250	28	3889	1996	EG,OL,LB	65	2013	TG,LB,OL,FM,BR	1250	25	350	3889	3889	175			
2	Center Cir	8/1.5/1.5	1956	190	28	591	1999	EG,OL,LB	66	2013	TG,LB,OL,FM,BR	300	25	53.2	591	591	26.6			
3	Gordon Ct	8/1.5/1.5	1956	190	28	591	1999	EG,OL,LB	69	2014	TG,LB,OL,FM,BR	300	25	53.2	591	591	26.6			
4	Knottingham Ln (7709-77621)	8/1.5/1.5	1966	428	28	1332	2012	TG,OL,B	90	2024	NONE	150	25	119.84	1332	1332	59.92			
5	Baimbridge Dr(7625-7621)	8/1.5/1.5	1966	166	28	516	2012	TG,OL,B	90	2024	NONE	160	25	46.48	516	516	23.24			
6	Elizabeth Ln (One)	8/1.5/1.5	1966	100	28	311	2012	tG,OL,B	90	2024	NONE									
7	Redondo Ct	10/2/2001	1994	409	27	1227	1994	New Const.	66	2013	TG,LB,OL,FM,BR	600	50	110.43	1227	1227	55.215			
	TOTAL			2,733.00								2,760.00	175.00	733.15	8,146.11	8,146.11	366.58	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XVIV	Farm-Ridge																			
1	Manning Rd (Lyman-Brunswick)	10/2/1.5	1997	2500	32	8889	1997	Reconst&Widen	74	2016	NONE									
2	Manning Rd (Limit-Limit)	10/2/1.5	1997	2000	32	7111	1997	Reconst&Widen	74	2016	NONE									
3	Fairview Ave	10/1.5/1.5	1989	1400	37	5756	2003	EG,OL,LBFM	83	2020	NONE								2011	
4	Judd St	10/1/1.5	1989	475	30	1583	2009	TG,OL,LB,FM	86	2021	NONE								2012	
5	Wilton Rd	10/1/1.5	1989	1050	30	3500	2009	TG,OL,LB,FM	86	2021	NONE								2012	
6	Harper Rd	10/1/1.5	1989	450	30	1500	2009	TG,OL,LB,FM	85	2021	NONE								2012	
7	Exton St	10/1/1.5	1989	550	30	1833	2009	TG,OL,LB,FM	85	2021	NONE								2012	
8	Green Valley Ct	9/2/1	1979	500	30	1667	2011	EG,OL,LB	89	2023	NONE									
9	Brunswick Rd	9/2/1	1979	765	30	2550	1999	EG,OL,LB	69	2014	NONE									
10	Brompton Dr	9/2/1	1979	585	30	1950	1999	EG,OL,LB	69	2014	NONE									
11	Dartmouth Ln	9/2/1	1979	325	30	1083	1999	EG,OL,LB	69	2014	NONE									
12	Carlton Rd	9/2/1	1979	845	30	2817	1999	EG,OL,LB	69	2014	NONE									
13	Hamilton Ln	9/2/1	1979	360	30	1200	2004	EG,OL,LB,FM	75	2017	NONE									
14	Danbury Dr	9/2/1	1979	540	30	1800	2004	EG,OL,LB,FM	75	2017	NONE									
15	Barclay Rd	9/2/1	1979	870	30	2900	2005	EG,OL,LB,FM	83	2020	NONE									
16	Bedford Ln	9/2/1	1978	330	30	1100	2005	EG,OL,LB,FM	82	2020	NONE									
17	Surrey Dr	9/2/1	1978	700	30	2333	2003	EG,OL,LB,FM	82	2020	NONE								2011	
18	Lyman Av	9/2/1	1978	945	30	3150	2000	EG,OL,LB,FM	78	2018	NONE									
19	Wakefield Dr	9/2/1	1978	1460	30	4867	2011	TG,OL,LB,FM	89	2023	NONE									
20	Marlborough Ln	9/2/1	1978	995	30	3317	2005	EG,OL,LB,FM	83	2020	NONE									
21	Aylesbury Ln	9/2/1	1978	335	30	1117	2001	EG,OL,LB,FM	72	2015	NONE								2006	
22	Cambridge Rd	9/2/1	1978	1090	30	3633	1998	EG,OL,LB	69	2014	NONE									
23	Abbey Dr	9/2/1	1978	640	30	2133	2001	EG,OL,LB,FM	79	2019	NONE								2006	
24	Main St	9/2/1	1978	1020	27	3060	2009	TG,OL,LB,FM	86	2021	NONE								2012	
25	Green Valley Rd	9/2/1	1979	2900	30	9667	2011	TG,OL,LB,FM	89	2023	NONE									
26	Lyman Ave (75th-Manning)	12/2/1.5	1991	1350	37	5550	2010	TG,OL,LB,FM	88	2023	CF							2000		2013
	TOTAL			24,980.00								0.00	0.00	0.00	0.00	0.00	0.00	2,000.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XX	Woodmere																			
1	Woodmere Dr	9/1.5/1.5	1996	1218	30	4060	2001	TG,OL,LB,FM	73	2016	NONE								2006	
2	Curran Ct	9/1.5/1.5	1996	225	24	600	2001	NEW CONST	73	2016	NONE								2006	
3	Windsor Dr	9/1.5/1.5	1996	995	30	3317	2001	NEW CONST	73	2016	NONE								2006	
4	Morgan Ct	9/1.5/1.5	1996	200	29	644	2001	NEW CONST	73	2016	NONE								2006	
5	Windsor Ct	9/1.5/1.5	1996	107	99	1177	2001	NEW CONST	73	2016	NONE								2006	
6	Whitlock Dr	9/1.5/1.5	1996	680	30	2267	2001	NEW CONST	73	2016	NONE								2006	
7	Oxford Dr	9/1.5/1.5	1996	276	30	920	2001	NEW CONST	73	2016	NONE								2006	
8	Oxford Ct	9/1.5/1.5	1996	312	25	867	2001	TG,OL,LB,FM	73	2016	NONE								2006	
9	Cameron Ct	9/1.5/1.5	1996	212	30	707	2001	NEW CONST	73	2016	NONE								2006	
10	Hedgewood Dr	9/1.5/1.5	1996	616	30	2053	2001	NEW CONST	73	2016	NONE								2006	
	TOTAL			4,841.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXI	Farmingdale Village																			
1	Parkview Dr	8/1.5/1.5	1973	1310	28	4076	2003	EG,OL,LB,FM	82	2020	NONE								2011	
2	Drover Ln	8/1.5/1.5	1973	3930	28	12227	2011	TG,BR,FM,LB,OL	89	2023	NONE									
3	Drover Ct	8/1.5/1.5	1973	330	28	1027	2007	EG,OL,LB,FM	83	2020	CF								2010	2013
4	Grandview Pl	8/1.5/1.5	1973	1500	28	4667	2003	EG,OL,LB,FM	82	2020	NONE									
5	Grandview Ln	8/1.5/1.5	1973	370	33	1357	2003	EG,OL,LB,FM	81	2019	NONE								2011	
6	Dixon Ct	8/1.5/1.5	1978	425	28	1322	1998	EG,OL,LB	71	2015	NONE									
7	Beller Dr	10/1.7/1.5	1973	4870	30	16233	2010	TG,BR,FM,LB,OL	87	2021	CF							6000		2013
8	Brewer Rd	8/1.5/1.5	1978	2150	28	6689	2011	TG,BR,FM,LB,OL	88	2023	NONE									
9	Cramer Ln	8/1.5/1.5	1978	480	28	1493	2012	TG,BR,FM,LB,OL	90	2024	NONE									
10	Alden Ln	8/1.5/1.5	1978	760	28	2364	2012	TG,BR,FM,LB,OL	90	2024	NONE									
11	Burgess Pl	8/1.5/1.5	1978	390	28	1213	2012	TG,BR,FM,LB,OL	90	2024	NONE									
12	Gilbert Ct	8/1.5/1.5	1978	330	28	1027	2000	EG,OL,LB,FM	71	2015	NONE									
13	Ailsworth Dr	11/1.7/1.5	1977	1420	28	4418	2010	TG,BR,FM,LB,OL	87	2021	CF							1800		2013
14	Ailsworth Ct	11/1.7/1.5	1977	535	28	1664	2010	TG,BR,FM,LB,OL	85	2021	CF							1000		2013
15	Pitcher Dr	8/1/1.5	1977	860	30	2867	2008	TG,BR,FM,LB,OL	85	2021	NONE									
16	Clifford Rd	8/1/1.5	1977	660	30	2200	2008	TG,BR,FM,LB,OL	85	2021	NONE									
17	Stewart Rd	8/1/1.5	1977	860	30	2867	2008	TG,BR,FM,LB,OL	85	2021	NONE									
18	Havens Dr	8/1/1.5	1977	360	28	1120	2004	EG,OL,LB,FM	77	2018	NONE									
19	Downers Dr	8/0/4	1997	150	23	383	2010	TG,BR,FM,LB,OL	87	2021	NONE							500		2013
20	Woodvale Dr	8/1.5/1.5	1974	1270	28	3951	1997	EG,OL,LB	66	2013	TG,LB,OL,FM	1270	100.0	355.6	3951	3951	177.8			
21	Beller Ct	8/1.5/1.5	1974	485	28	1509	1997	EG,OL,LB	66	2013	TG,LB,OL,FM	500	50.0	135.8	1509	1509	67.9			
22	Highcrest Dr	8/1.5/1.5	1974	765	28	2380	1997	EG,OL,LB	66	2013	TG,LB,OL,FM	800	50.0	214.2	2380	2380	107.1			
23	Hillside Ln (Meadow-Woodvale)	8/1.5/1.5	1974	1625	28	5056	2011	TG,BR,FM,LB,OL	89	2023	NONE									
24	Hillside Ct	8/1.5/1.5	1974	180	28	560	2006	EG,OL,LB,FM	81	2019	NONE								2012	
25	Meadow Ln	8/1.5/1.5	1974	1250	28	3889	1999	EG,OL,LB	73	2016	NONE									
26	Harvest Pl	8/1.5/1.5	1974	1230	28	3827	2006	EG,OL,LB,FM	80	2019	NONE								2012	
27	Meadow Ct	8/3/1.5	1974	340	28	1058	2009	TG,B,OL	87	2021	NONE								2012	
28	Pearson Dr	10/2.5/1.5	1988	920	28	2862	2009	TG,B,OL	86	2021	NONE								2012	
29	Water Tower Ln	10/2/1	1988	340	28	1058	2012	TG,BR,FM,LB,OL	90	2024	NONE									
30	Sandalwood Dr	10/2/1	1988	600	28	1867	2012	TG,BR,FM,LB,OL	90	2024	NONE									
31	Aster Ln	10/2.5/1.5	1988	340	28	1058	2009	TG,B,OL	86	2021	NONE								2012	
32	Sandalwood Ct	9/1.5/1.5	1992	600	28	1867	2011	TG,B,OL	88	2023	NONE									
33	Chicory Ct	9/2.5/1.5	1992	700	28	2178	2009	TG,B,OL	86	2021	NONE								2012	
34	Spring Green Dr	8/2/1.5	1973	1165	28	3624	2003	EG,OL,LB,FM	80	2019	NONE								2011	
35	83rd St (Lemont-Dunham)	8/2/1.5	1950	1000	28	3111	1996	EG,OL,LB	71	2015	NONE									
36	83rd St (Beller-Grandview)	8/2/1.5	1950	1000	28	3111	1996	EG,OL,LB	71	2015	NONE									
37	Hillside Ln (Pearson-Meadow)	8/2/1.5	1974	250	28	778	2009	TG,BR,FM,LB,OL	86	2021	NONE									
	TOTAL			35,750.00								2,570.00	200.00	705.60	7,840.00	7,840.00	352.80	9,300.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXII	Carriage Hill																			
1	Oldfield Rd (Frontage 1400')	8/1.5/1.5	1930	1400	20	3111	2004	EG,OL,LB,FM,BR	69	2014	NONE									
2	Oldfield Rd (675')	8/1.5/1.5	1930	675	40	3000	2004	EG,OL,LB,FM,BR	69	2014	NONE									
3	Oldfield Rd (800')	8/1.5/1.5	1930	800	20	1778	2004	EG,OL,LB,FM,BR	69	2014	NONE									
4	Robert Rd (Oldfield-Donegal)	8/2.5/1.5	1989	720	30	2400	2012	TG,OL,B	90	2024	NONE									
5	Shannon Ct	8/2.5/1.5	1989	325	30	1083	2012	TG,OL,B	90	2024	NONE									
6	Donegal Dr	8/2.5/1.5	1989	1254	30	4180	2012	TG,OL,LB,FM,B	90	2024	NONE									
7	87th St (Lemont-Washington)	8/1.5/1.5	1940	2250	20	5000	Annex	EG,OL,LB,FM,BR	70	2015	NONE									
8	Andrus Rd (Frontage to 66)	8/1.5/1.5	1940	200	20	444	2004	EG,OL,LB,FM	73	2016	NONE									
9	Andrus Rd (Oldfield to 66)	8/1.5/1.5	1940	300	20	667	Annex	EG,OL,LB,FM	70	2015	NONE									
	TOTAL			7,924.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXIII	Tara Hill																			
1	Dunmore Dr	8/1.5/1.5	1989	1000	30	3333	1995	New Const.	66	2013	TG,BR,LB,OL	1000	50.0	300	3333	3333	150			
2	Tara Hill Rd	8/1.5/1.5	1989	1300	30	4333	1995	New Const.	65	2013	TG,BR,LB,OL	1300	100.0	390	4333	4333	195			
3	Carlow Dr	8/1.5/1.5	1989	1500	30	5000	1995	New Const.	65	2013	TG,BR,LB,OL	1500	100.0	450	5000	5000	225			
4	Brandon Rd	8/1.5/1.5	1989	1060	30	3533	1995	New Const.	65	2013	TG,BR,LB,OL	1060	50.0	318	3533	3533	159			
5	Kerry Ln	8/1.5/1.5	1989	660	30	2200	1995	New Const.	66	2013	TG,BR,LB,OL	660	100.0	198	2200	2200	99			
6	Middleton Rd	8/1.5/1.5	1989	1060	30	3533	1995	New Const.	65	2013	TG,BR,LB,OL	1060	100.0	318	3533	3533	159			
7	Kilkenny Dr	8/1.5/1.5	1989	1200	30	4000	1995	New Const.	66	2013	TG,BR,LB,OL	1200	50.0	360	4000	4000	180			
	TOTAL			7,780.00								7,780.00	550.00	2,334.00	25,933.33	25,933.33	1,167.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XX1V	Carriage Greens #4																			
1	Royal Swan Ln	9/1.5/1.5	1990	1250	27	3750	2001	EG,OL,LB,FM	72	2015	NONE								2006	
2	Black Swan Ct	9/1.5/1.5	1990	200	27	600	1997	EG,OL,LB	71	2015	NONE									
3	Lake Ridge Dr	9/1.5/1.5	1990	1630	27	4890	2004	EG,OL,LB,FM	77	2018	NONE									
4	Gleneagles Ln	10/1.5/1.5	1988	720	27	2160	2007	EG,OL,LB,FM	85	2021	CF							1000	2010	2013
5	Gleneagles Ln (Bubbles)	10/1.5/1.5	1988	270	20	600	2007	EG,OL	85	2021	CF							270	2010	2013
6	Carlisle Ct	6/6/	1979	1820	30	6067	2005	TG,OL,LB,FM,BR	79	2019	NONE									
7	Kimberly Ct	6/6/	1979	360	30	1200	2005	TG,OL,LB,FM,BR	81	2019	NONE									
8	Kentwood Ct	6/6/	1979	1060	30	3533	2005	TG,OL,LB,FM,BR	78	2018	NONE									
	TOTAL			7,310.00								0.00	0.00	0.00	0.00	0.00	0.00	1,270.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXV	**Brookeridge**																			
1	86th St	6/1.5/1.5	1978	500	30	1667	2007	EG, OL,LB,FM	85	2021	CF							1000	2010	2013
2	Creekside Ln	6/1.5/1.5	1978	2500	28	7778	2001	EG, OL,LB,FM	66	2013	TGBR,FM,LB,OL	2500	50.0	150	1667	1667	75		2006	
3	Woodview Ct	6/1.5/1.5	1978	360	30	1200	2007	EG,OL,BR,LB,TM	85	2021	CF							500	2010	2013
4	Kentwood Ct (CDS)	6/1.5/1.5	1978	500	30	1667	2011	EG,OL,LB	89	2023	NONE									
5	Kearney Rd (Creekside Ln N 7	6/ /1.5	1940	770	27	2310	2007	BR,EG,OL,LB,FM	83	2020	CF							1500	2010	2013
	TOTAL			4,630.00								2,500.00	50.00	150.00	1,666.67	1,666.67	75.00	3,000.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXVI	Carriage Greens 1 & 2																			
1	Carr Greens Dr (Frontage-Old Oak	10/ /2	1968	200	20	444	1999	EG,OL,LB	66	2013	TG, OL,LB,FM	200	100.0	40	444	444	444			
2	Carr Greens Dr (Frontage-Old Oak	10/ /2	1968	200	20	444	1999	EG,OL,LB	67	2013	TG, OL,LB,FM	200	100.0	40	444	444	444			
3	Carr Green Dr (Old Oak-Coachmar	10/ /2	1968	1440	37	5920	1999	EG,OL,LB	66	2013	TG, OL,LB,FM	1440	100.0	532.8	5920	5920	5920			
4	Carr Green Dr (Coachman-end)	10/ /2.5	1972	1260	25	3500	1999	EG,OL,LB	67	2013	TG, OL,LB,FM	1260	100.0	315	3500	3500	3500			
5	Old Oak Pl	8/ 2.5 /1.5	1968	700	25	1944	2009	TG,B,OL	83	2020	NONE								2012	
6	Old Oak Pl (East of CG)	8/ 2.5 /1.5	1989	250	30	833	2009	TG,B,OL	87	2021	NONE								2012	
7	Royal Oak Rd	8/ 2.5 /1.5	1968	800	25	2222	2009	TG,B,OL	87	2021	NONE								2012	
8	Royal Oak Rd (East of CG)	6/ 1/1.5	1989	350	30	1167	2006	EG,OL,LB,FM	85	2021	NONE								2012	
9	Coachmans Rd	10/ /2.5	1972	880	37	3618	2002	EG,OL,LB,FM	69	2013	TG, OL,LB,FM	880	100.0	325.6	3618	3618	3618		2010	
10	Gleneyre Rd	10/ /2.5	1972	1100	25	3056	2002	EG,OL,LB,FM	65	2013	TG, OL,LB,FM	1100	100.0	275	3056	3056	3056		2010	
11	Heather Ln	6/ /1.5	1968	800	25	2222	2002	EG,OL,LB,FM	67	2013	TG, OL,LB,FM	800	100.0	200	2222	2222	2222		2010	
12	Fox Hill Pl	6/ /1.5	1968	720	25	2000	2011	TG,OL,LB,FM	89	2023	NONE									
13	Laurel Ln	6/ /1.5	1968	350	25	972	2006	TG,OL,LB,FM	84	2020	CF							500	2010	2013
	TOTAL			9,050.00								5,880.00	700.00	1,728.40	19,204.44	19,204.44	19,204.44	500.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXVII	Carriage Greens 3																			
1	Evergreen Lane	8/2/1.5	1986	2613	28	8129	2001	EG,OL,LB,FM	70	2015	NONE								2006	
2	Thistlewood Ln	10/1.5/1.5	1987	1125	30	3750	2010	TG,OL,LB,FM	88	2023	CF							1500		2013
3	Willowcreek Ln	8/2/1.5	1986	990	28	3080	2003	EG,OL,LB,FM	79	2019	NONE								2011	
4	Winterberry Ln	8/2/1.5	1986	780	28	2427	2003	EG,OL,LB,FM	81	2019	NONE								2011	
5	Evergreen Ct	8/2/1.5	1986	220	30	733	2009	TG.B.OL	87	2021	NONE								2012	
	TOTAL			5,728.00								0.00	0.00	0.00	0.00	0.00	0.00	1,500.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXVIII	Pinehurst																			
1	Pinehurst Dr	8/2.5/1.5	1988	1510	28	4698	2009	TG,B,OL	87	2021	NONE								2012	
2	Pine Bluff Ct	8/2.5/1.5	1988	333	35	1295	2009	TG,B,OL	87	2021	NONE								2012	
3	Pine Cove Ct	8/2.5/1.5	1988	340	34	1284	2009	TG,B,OL	87	2021	NONE								2012	
4	Pine View Ct	8/2.5/1.5	1988	600	35	2333	2009	TG,B,OL	87	2021	NONE								2012	
5	Pinehurst (CDS)	8/2.5/1.5	1988	200	28	622	2009	TG,B,OL	87	2021	NONE								2012	
	TOTAL			2,983.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXIX	Sawmill Creek																			
1	Oakley Dr	9/1./1.5	1978	500	30	1667	2008	TG,BR,FM,LB,OL	86	2021	NONE								2011	2014
2	Golfview Dr	9/1./1.5	1978	800	30	2667	2008	TG,BR,FM,LB,OL	86	2021	NONE								2011	2014
3	Sawmill Creek Dr	9/1./1.5	1978	920	30	3067	2008	TG,BR,FM,LB,OL	86	2021	NONE								2011	2014
4	Dickens Cir	9/1./1.5	1978	440	30	1467	2008	TG,BR,FM,LB,OL	86	2021	NONE								2011	2014
	TOTAL			2,660.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXX	Devonshire																			
1	Knottingham Cir	8/2/1.5	1983	1800	30	6000	1999	EG,OL,LB,FM	71	2015	NONE									
2	Ashley Ct	8/2/1.5	1983	225	30	750	2010	TG,OL,LB,FM	88	2023	CF									
3	Durham Cir	8/2/1.5	1983	300	30	1000	2010	TG,OL,LB,FM	88	2023	CF									
	TOTAL			2,325.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXXI	Bailey Park																			
1	Bailey Rd	9/1.5/1.5	1988	5550	34	20967	2007	EG,OL,LB,FM	83	2020	CF							7000	2010	2013
2	Stewart Dr	9/1.5/1.5	1988	1400	27	4200	2012	TG,OL,LB,FM	90	2024	NONE									
3	Barrymore Dr	9/1.5/1.5	1988	1500	27	4500	2012	TG,OL,LB,FM	90	2024	NONE									
4	Lakeview Dr	14/2/1.5	1978	3800	37	15622	2010	TG,OL,LB,FM	87	2021	CF							2000		2013
	TOTAL			12,250.00								0.00	0.00	0.00	0.00	0.00	0.00	9,000.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXXII	Marco Estates																			
1	Marco Ct	10/1.5/1.5	2000	500	30	1667	2004	New Const.	79	2019	none								2010	2013
XXXIII	Smart Oaks Glen																			
1	Chapman Ct	10/1.5/1.5	1997	800	24	2133	1999	New Const.	71	2015	NONE									
2	Chapman Dr	10/1.5/1.5	1997	800	27	2400	1999	New Const.	71	2015	NONE									
3	Adams St	10/1.5/1.5	1992	620	27	1860	1996	New Const.	71	2015	NONE									
4	Von Drash Dr	10/1.5/1.5	1992	450	27	1350	1996	New Const.	72	2015	NONE									
5	Urban Dr	10/1.5/1.5	1992	475	27	1425	1996	New Const.	73	2016	NONE									
6	Westminster Ct	10/1.5/1.5	1986	440	30	1467	2007	EG,OL,LB,FM	83	2020	CF								2010	2013
	TOTAL			4,085.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXXIV	Farmingdale South																			
1	Greenbriar Ln	8/1.5/1	1960	1200	28	3733	1997	EG,OL,LB	66	2013	TG,OL,LB,FM	1200	50.0	336	3733	3733	168			
2	Pine Ct	8/1.5/1	1960	600	28	1867	2012	EG,OL,LB	90	2024	NONE									
3	Adams St	8/2/1.5	1960	1000	28	3111	2010	TG,OL,LB,FM	87	2021	CF							1500		2113
4	Iroquois St	8/1.5/1	1960	1040	28	3236	1997	EG,OL,LB	66	2013	TG,OL,LB,FM	1100	50.0	291.2	3236	3236	145.6			
5	Sleepy Hollow Ln	8/1.5/1	1960	1100	28	3422	2012	EG,OL,LB,FM	90	2024	NONE									
6	Grant St	8/1.5/1	1960	660	28	2053	1999	EG,OL,LB	66	2013	TG,OL,LB,FM	700	50.0	184.8	2053	2053	92.4			
7	Sleepy Hollow Ln (CDS)	8/1.5/1	1960	200	28	622	2011	TG,OL,LB,FM	89	2023	NONE									
70	Grant St (CDS)	8/1.5/1	1960	300	28	933	2000	EG,OL,LB,FM	70	2015	TG,OL,LB,FM	200	50.0	84	933	933	42			
	TOTAL			6,100.00								3,200.00	200.00	896.00	9,955.56	9,955.56	448.00	1,500.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXXV	Pine Parkway																			
1	Pine Parkway	6/1.5/1	1969	900	20	2000	2007	BR,EG,OL,FM,LB	84	2020	CF							1500	2010	2013
2	Pine Parkway	6/1.5/1	1969	900	20	2000	2007	BR,EG,OL,FM,LB	84	2020	CF							1500	2010	2013
3	Adams St	6/2/1.5	1940	840	18	1680	2009	TG,OL,LB,FM	87	2021	NONE								2012	
XXXVI	Regency Grove																			
1	Regency Grove Dr	8/1/1.5	1978	2000	28	6222	2009	TG,OL,LB,FM	87	2021	NONE								2012	
2	Wildwood Ct	8/1/1	1978	400	28	1244	2006	TG,OL,LB,FM	85	2021	NONE									
3	Adams St	8/1/1.5	1978	300	28	933	2009	TG,OL,LB,FM	87	2021	NONE								2012	
	TOTAL			5,340.00								0.00	0.00	0.00	0.00	0.00	0.00	3,000.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	YEAR	2013	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXXVII	Hidden Lakes																			
1	Hinswood Dr	8/1/1.5	1968	1120	37	4604	2008	TG,BR,FM,LB,OL	83	2020	NONE								2011	
2	Sweetwater Ct	12/2/1.5	1993	400	28	1244	1995	BUILDER	66	2013	TG,LB,OL	400	50.0	770	8556	8556	385			
3	Ripple Ridge Dr	12/2/1.5	1993	2750	28	8556	2010	TG,BR,FM,LB,OL	88	2023	CF							3000		2013
4	Mystic Trace	12/2/1.5	1993	970	28	3018	2010	TG,BR,FM,LB,OL	88	2023	CF							1000		2013
5	Wilmette Ave	12/2/1.5	1993	824	17	1556	1994	BUILDER	71	2015	NONE									
6	Captons Ln	9/1.5/1.5	1978	900	30	3000	2007	EG, OL	84	2020	CF							1000	2010	2013
7	Dawn Ln	12/2/1.5	1993	620	30	2066	2007	OL,BR FIALA	85	2021	CF							1000	2010	2013
8	Ripple Ridge Dr CDS	12/2/1.5	1994	300	30	1000	2004	OL,BR FIALA	80	2019	NONE									
9	Spring Ct	12/2/1.5	1995	300	30	1000	2004	OL,BR FIALA	80	2019	NONE									
	TOTAL			8,184.00								400.00	50.00	770.00	8,555.56	8,555.56	385.00	6,000.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXXVIII	Darien Woods																			
1	Darien Woods Ct	10/1.5/1.5	1997	440	30	1467	2002	New Const	72	2015	NONE								2010	
2	Kearney Rd	10/1.5/1.5	1997	600	21	1400	1998	New Const	73	2016	NONE									
	TOTAL			1,040.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2013*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXXIX	Waterfall Glen																			
1	Waterfall Glen Blvd	10/1.5/1.5	1997	2130	37	8757	2000	BUILDER	74	2016	NONE									
2	Waverly Ct	10/1.5/1.5	1997	330	29	1063	2000	BUILDER	80	2019	NONE									
3	Forest Glen Ct	10/1.5/1.5	1997	200	29	644	2000	BUILDER	79	2019	NONE									
4	Fountain Point Cir	10/1.5/1.5	1997	200	29	644	2000	BUILDER	81	2019	NONE									
	TOTAL			2,860.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

SUMMARY SHEET

PAGE NO.	SUBDIVSION	TOTAL CITY ROAD LENGTHS LINEAL FEET	PROPOSED LANE MILES	PROPOSED BASE REPAIR SQUARE YARDS	PROPOSED SURFACE ASPHALT OVERLAY TONS	PROPOSED FABRIC MATERIAL SQUARE YARDS	PROPOSED MiIIING-GRINDING SQUARE YARDS	PROPOSED LEVELING BINDER ASPHALT	PROPOSED CRACK FILL LINEAL FEET
A-1	Marion Hills North	22,570.00	3,320.00	400.00	597.60	6,640.00	6,640.00	298.80	0.00
A2	Marion Hills South	13,900.00	-	0.00	0.00	0.00	0.00	0.00	1,700.00
A3	Clarefield	13,045.00	-	0.00	0.00	0.00	0.00	0.00	10,500.00
A4	Farmingdale Heights	3,416.00	-	0.00	0.00	0.00	0.00	0.00	1,014.00
A5	Woodlands	3,171.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A6	North of 67th Street	5,202.00	-	0.00	0.00	0.00	0.00	0.00	1,500.00
A7	Hinsbrook	49,472.00	-	0.00	0.00	0.00	0.00	0.00	4,000.00
A8	Plainfield Highlands	7,590.00	-	0.00	0.00	0.00	0.00	0.00	1,500.00
A9	Farmingdale Terrace North	9,705.00	1,565.00	350.00	438.20	4,868.89	4,868.89	219.10	0.00
A10	Farmingdale Terrace South	10,685.00	-	0.00	0.00	0.00	0.00	0.00	4,000.00
A11	Farmingdale Terrace West	4,680.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A12	Brookhaven 1	15,850.00	-	0.00	0.00	0.00	0.00	0.00	3,500.00
A13	Darien Club	12,640.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A14	Farmingdale 5-9	27,297.00	1,605.00	200.00	449.40	4,993.33	4,993.33	224.70	5,700.00
A15	Downers Fairview	6,980.00	1,260.00	150.00	340.20	3,780.00	3,780.00	170.10	0.00
A16	Brookhaven 2	15,850.00	-	0.00	0.00	0.00	0.00	0.00	4,000.00
A17	Knottingham	2,733.00	2,760.00	175.00	733.15	8,146.11	8,146.11	366.58	0.00
A18	Farmingdale Ridge	24,980.00	-	-	-	-	-	-	2,000.00
A19	Woodmere	4,841.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A20	Farmingdale Village	24,980.00	2,570.00	200.00	705.60	7,840.00	7,840.00	352.80	9,300.00
A21	Carriage Hill	7,924.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A22	Tera Hill	7,780.00	7,780.00	550.00	2,334.00	25,933.33	25,933.33	1,167.00	0.00
A23	Carriage Green 4	7,310.00	-	0.00	0.00	0.00	0.00	0.00	1,270.00
A24	Brookeridge	4,630.00	2,500.00	50.00	150.00	1,666.67	1,666.67	75.00	3,000.00
A25	Carriage Green 1 &2	9,050.00	5,880.00	700.00	1,728.40	19,204.44	19,204.44	19,204.44	500.00
A26	Carriage Green 3	5,728.00	-	0.00	0.00	0.00	0.00	0.00	1,500.00
A27	Pinehurst	2,983.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A8	Sawmill	2,660.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A29	Devonshire	2,325.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A30	Bailey Park	12,250.00	-	0.00	0.00	0.00	0.00	0.00	9,000.00
A31	Marco Estattes Smart Oaks	4,085.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A32	Farmingdale South	6,100.00	3,200.00	200.00	896.00	9,955.56	9,955.56	448.00	1,500.00
A33	Pine Parkway	5,340.00	-	0.00	0.00	0.00	0.00	0.00	3,000.00
A34	Hidden Lake	8,184.00	400.00	50.00	770.00	8,555.56	8,555.56	385.00	6,000.00
A35	Darien Wood	1,040.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A36	Waterfall Glenn	2,860.00	-	0.00	0.00	0.00	0.00	0.00	0.00
	TOTALS	**369,836.00**	**32,840.00**	**3,025.00**	**9,142.55**	**101,583.89**	**101,583.89**	**22,911.52**	**74,484.00**
	MILES	**70.04**	**6.22**						

CITY OF DARIEN ROAD MAINTENANCE PLAN
2013
PROPOSED

COST SUMMARY BREAKDOWN

PROPOSED LINEAL FEET/LANE MILES		PROPOSED BASE REPAIR SQUARE YARDS	PROPOSED SURFACE ASPHALT OVERLAY TONS	PROPOSED FABRIC MATERIAL SQUARE YARDS	PROPOSED MiIIING-GRINDING SQUARE YARDS	PROPOSED LEVELING BINDER ASPHALT	PROPOSED CRACK FILL LINEAL FEET
LINEAL FEET	**32,840.00**	**3,025.00**	**9,142.55**	**101,583.89**	**101,583.89**	**22,911.52**	**74,484.00**
MILES	**6.22**						

DESCRIPTION		UNIT	UNIT COST	QUANTITY	TOTAL COST
BITUMINOUS MATERIALS (PRIME COAT)		GAL	$1.65	1,015.84	$1,676.13
AGGREGATE (PRIME COAT)		TON	$16.50	203.17	$3,352.27
AREA REFLECTIVE CRACK CONTROL TREATMENT		SY	$1.10	101,583.89	$111,742.28
BITUMINOUS SURFACE REMOVAL (COLD MILLING) 2.25"		SY	$2.95	101,583.89	$299,672.47
1.5" BITUMINOUS CONCRETE SURFACE COURSE, MIX C, N50 (QC/QA)		TON	$71.65	9,142.55	$655,063.71
3/4" LEVELING BINDER (MACHINE METHOD), SUPERPAVE, IL-4.75, N50 (QC/QA)		TON	$77.20	22,911.52	$1,768,769.30
CLASS D PATCHES, SPECIAL, 6"		SY	$44.10	3,025.00	$133,402.50
STRUCTURES TO BE ADJUSTED		EACH	$500.00	20.00	$10,000.00
SUBTOTAL					$2,983,678.66
CONTINGENCY (10%)					$ 298,367.87
SUBTOTAL					$3,282,046.53
DESIGN ENGINEERING (5%)					$164,102.33
CORING TESTING SERVICES		LUMP SUM			$15,000.00
				TOTAL =	$3,461,148.85

PROGRAM DESCRIPTION		UNIT	UNIT COST	QUANTITY	TOTAL COST
Crack Seal Program		L.F.	1.38	74,484.00	$102,787.92
CONTINGENCIES		L.F.		7,448.40	$10,278.79
TOTAL CRACK SEAL PROGRAM		L.F.		81,932.40	$113,066.71
TOTAL CRACK SEAL PROGRAM		MILES	7286.4	15.52	$113,066.71

DESCRIPTION-PAVING PROGRAM-BREAKDOWN

COST PER MILE FOR REPAVING		$ 556,481.91
COST PER LINEAL FOOT		$ 105.39
COST PER SQUARE YARD		$ 34.07

DESCRIPTION-CRACK SEAL PROGRAM-BREAKDOWN

COST PER MILE FOR CRACK SEALING		$ 7,286.40
COST PER LINEAL FOOT		$ 1.38

ENTER CATALOGUE YEAR IN CELL B1	2013
66	2013
67	2013
68	2014
69	2014
70	2015
71	2015
72	2015
73	2016
74	2016
75	2017
76	2017
77	2018
78	2018
79	2019
80	2019
81	2019
82	2020
83	2020
84	2020
85	2021
86	2021
87	2021
88	2022
89	2023
90	2024

Road Rehab Program Assumptions

Program Priorities

1. Prioritize lowest road quality ratings first (road condition ratings consider pot holes, cracks, patches among other factors)

2. Align road rehab project with ditch enhancement efforts and project schedule

3. Meet capacity constraints based on available budget resources

Other Considerations

1. Road degradability based on traffic and prior reconstruction

2. Base 12 year standard rehab cycle (cycle may vary +/- two to three years)

3. Road rating by default is one point however roads are rated every September which effects the up coming schedule

Road Rating Matrix

Cycle	Road Rating Scale	Rehab Schedule		
1	0 - 67	2013	2014	2015
2	68 - 69	2014	2015	2016
3	70 - 72	2015	2016	2017
4	73 - 74	2016	2017	2018
5	75 - 76	2017	2018	2019
6	77 - 78	2018	2019	2020
7	79 - 81	2019	2020	2021
8	82 - 84	2020	2021	2022
9	85 - 87	2021	2022	2023
10	88	2022	2023	2024
11	89	2023	2024	2025
12	90	2024	2025	2026

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
I	**Marion Hills North**																			
1	Dale Road	NA/2/1.5	1940	860	18	1720	2003	EG, FM, LB, OL	76	2018	None							900	2011	2014
2	Iris Road	NA/2/1.5	1940	1240	18	2480	1999	EG, FM, LB, OL	69	2015	None									
3	68th Street	NA/2/1.5	1940	2100	18	4200	2000	EG, FM, LB, OL	71	2016	None									
4	69th Street	NA/2/1.5	1940	2300	18	4600	2001	EG, FM, LB, OL	73	2017	None								2006	
5	Peony Place	NA/2/1.5	1940	660	18	1320	2002	EG, FM, LB, OL	75	2018	None								2013	2016
6	Holly Avenue	NA/2/1.5	1940	1660	18	3320	2002	EG, FM, LB, OL	72	2016	None									
7	Roger Road	NA/2/1.5	1940	1120	18	2240	2013	EG,LB, OL	90	2025	None									
8	Brookbank Avenue	NA/2/1.5	1940	1150	18	2300	2013	EG,LB, OL	90	2025	None									
9	High Road	NA/2/1.5	1940	2950	18	5900	2012	EG,LB, OL	89	2024	None									
10	Eleanor Place	NA/2/1.5	1940	1050	18	2100	2013	EG,LB, OL	90	2025	None									
11	Crest Road	6/1/1.5	1940	2200	20	4889	2008	TG,BR,FM,LB,OL	87	2022	CF							3000	2011	2014
12	Clarendon Hills Rd (67th-71st)	NA/3/2	1940	2640	22	6453	2001	EG, FM, LB, OL	75	2018	None								2007	
13	Clarendon Hills Rd (71st-75th)	NA/3/2	1940	2640	36	10560	2001	EG, FM, LB, OL	74	2017	None								2007	
	TOTAL			22,570.00								0.00	0.00	0.00	0.00	0.00	0.00	3,900.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
II	**Marion Hills South**																			
1	Janet Avenue	NA/2/1.5	1940	2800	18	5600	2006	TG,OL,FM	83	2021	None								2009	2012
2	74th Place	5/1.5/1.5	1940	1000	18	2000	2009	TG,BR,FM,LB,OL	87	2022	None									
3	Brookbank Road	4/2/1.5	1940	600	19	1267	2010	TG,BR,FM,LB,OL	87	2022	None								2013	
4	Evans Place	NA/2/1.5	1940	660	18	1320	2011	TG,BR,FM,LB,OL	88	2024	CF							500		2014
5	Poplar Lane	NA/2/1.5	1940	840	18	1680	2012	EG,OL	89	2024	None									
6	Eleanor Place (Elm-Janet)	3.2/2.5/1.5	1940	980	18	1960	2010	TG,BR,FM,LB,OL	87	2022	None								2013	
7	Eleanor Place (Janet-Plnfld)	NA/2/1.5	1940	700	18	1400	2004	EG,OL,FM	77	2019	None									
8	Eleanor Place (74th-Elm)	7/2/1.5	1940	440	18	880	2009	TG,BR,FM,LB,OL	86	2022	None									2012
9	Sunrise Avenue	NA/2/1.5	1940	980	18	1960	2007	OL,FM	80	2020	None								2013	
10	Capital Drive	NA/2/1.5	1940	980	18	1960	2002	EG,OL,FM	67	2014	TG,BR,FM,LB,OL	980	50.0	176.4	1960	1960	88.2		2007	
11	Crest Road	NA/2/1.5	1940	920	18	1840	2004	EG,OL	77	2019	None									
12	High Road	NA/2/1.5	1940	440	18	880	2012	TG,BR,FM,LB,OL	89	2024	None									
13	Elm Street (CH-Evans)	NA/2/1.5	1940	760	20	1689	2004	EG,OL,FM	74	2017	None									
14	Elm Street (Evans-Rt 83)	NA/2/1.5	1940	1800	18	3600	2004	EG,OL,FM	74	2017	None									
	TOTAL			13,900.00								980.00	50.00	176.40	1,960.00	1,960.00	88.20	500.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
III	**Clarefield**																			
1	Alabama Avenue	NA/2/1.5	1940	1093	18	2186	2000	EG,OL,FM	71	2016	None									
2A	Tennessee Ave	NA/2/1.5	1940	1093	18	2186	2000	EG,BR,FM,LB,OL	74	2017	None									
3	Bentley Ave	NA/2/1.5	1940	1093	18	2186	2000	EG,OL,FM	76	2018	None									
4	Western Ave	6/2/1.5	1940	1093	19	2307	2010	TG,BR,OL,EG,FM	88	2024	None								2012	
5	Leonard Drive	8/4/1.5	1940	1093	19	2307	2010	TG,BR,OL,EG,FM	88	2024	None								2013	
6	Chestnut Ln (Rich-Alabama)	NA/2/1.5	1940	2300	18	4600	2000	EG,OL,FM	71	2016	None									
7	67th Street	NA/2/1.5	1940	5280	20	11733	2007	TG,BR,OL,EG,FM	77	2019	None								2013	
	TOTAL			13,045.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
IV	**Farmingdale Heights**																			
1	Trenton Lane	8/1/1.5	1976	530	30	1767	2009	TG,BR,FM,LB,OL	86	2022	None								2012	
2	Albany Lane	8/1/1.5	1976	350	30	1167	2009	TG,BR,FM,LB,OL	86	2022	None								2012	
3	Columbia Lane	8/1.7/1.5	1976	650	30	2167	2010	TG,OL,LB	87	2022	None									
4	Charleston Drive	8/1.5/1.5	1976	1210	30	4033	2007	BR,OL,EG,FM,TG	84	2021	None								2013	
5	Chestnut Ln (Rich-Charls)	8/1/1.5	1976	676	30	2253	2008	TG,BR,FM,LB,OL	84	2021	CF							2000	2011	2014
	TOTAL			3,416.00								0.00	0.00	0.00	0.00	0.00	0.00	2,000.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
V	**Woodlands of Darien**																			
1	Tall Pines Dr (Cass-East N)	9/1.5/1.5	1986	435	25	1208	2008	TG,BR,FM,LB,OL	85	2022	CF							1000	2011	2014
2	Tall Pines Dr (Cass-East S)	9/1.5/1.5	1986	435	15	725	2008	TG,BR,FM,LB,OL	85	2022	CF							1000	2011	2014
3	Tall Pines Dr (East)	9/1.5/1.5	1986	1521	30	5070	2008	TG,BR,FM,LB,OL	85	2022	CF							1000	2011	2014
4	Bavarian Ln	9/1.5/1.5	1986	780	30	2600	2008	TG,BR,FM,LB,OL	84	2021	CF							1000	2011	2014
	TOTAL			3,171								0.00	0.00	0.00	0.00	0.00	0.00	4,000.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

Number	Location	Composition Aggr./Bind./Surf. (inches)	Year Const.	Pvmnt. Length (feet)	Pvmnt. Width (feet)	Square Yards	Most Recent Rehab.	Description of Work	Cond. Rating	Proposed Rehabilitation *YEAR*	Recommended Rehabilitation *2014*	PROPOSED LINEAL FEET	OL (tons)	FM (sq. yds)	Mill (sq. yds)	LB (tons)	Crackfill PROPOSED (LF)	Crackfill Year COMPLETED	Crackfill Year PROPOSED
VI	North of 67th St																		
1	Tennessee Ave	NA/1.5/1.5	1940	760	27	2280	2007	EG,OL,FM,BR,LB	84	2020	None							2013	
2	Easy St	11/1.5/1.5	1986	222	28	691	2007	TG,OLFM,LB	84	2020	None							2013	
3	High Ridge Ct	9/1.5/1.5	1995	600	27	1800	2011	New Cons.	88	2024	CF						600		2014
4	Windmere Ct	8/2/1.5	1996	570	27	1710	2000	New Cons.	71	2016	None								
5	Sean Circle	8/2/1.5	2002	850	30	2833	2003	New Cons.	68	2015	None							2011	
6	Bentley Ave	NA/1.5/1.5	1940	650	17	1228	2003	EG,OL,FM,LB	71	2016	None							2011	
7	Ridge Rd	8/2/1.5	2002	650	20	1444	2002	EG,OL,FM,LB	74	2017	None							2013	
8	Western Ave	NA/1.5/1.5	1940	500	27	1500	2004	EG,OL,FM,LB	73	2017	None								
9	Richmond Ave	NA/1.5/1.5	1940	400	19	844	2011	TG,OL,FM,LB	88	2024	None								
	TOTAL			5,202								0.00	0.00	0.00	0.00	0.00	600.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
VII	Hinsbrook																			
1	69th Street	8/2/4	1966	5280	28	16427	2011	EG,BR,OL,LB	88	2024	CF									2014
2	70th Street	8/2/4	1967	2760	28	8587	2011	EG,OL,LB	88	2024	CF									2014
3	Richmond Ave (69th-67th)	8/2/4	1967	1500	37	6167	2006	EG,OL,LB,FM	79	2020	None								2012	
4	Richmond Ave (69th-72nd)	8/2/4	1966	1680	37	6907	2006	EG,OL,LB,FM	79	2020	None								2012	
5	Richmond Ave (72nd-Seminole	8/2/4	1966	1960	28	6098	2003	EG,OL,LB,FM	79	2020	None								2011	
6	Maple Ln	8/2/4	1967	2840	28	8836	2012	TG,LB,FM,OL	89	2024	None									2015
7	71st Street	8/2/4	1966	5280	37	21707	2002	EG,OL,LB,FM	73	2017	None								2010	2013
8	Sierra Drive	8/1/1.5	1966	1350	28	4200	2008	TG,BR,FM,LB,OL	86	2022	CF							2000	2011	2014
9	Sierra Court	8/1/1.5	1966	300	40	1333	2008	TG,BR,FM,LB,OL	86	2022	CF							2000	2011	2014
10	Ironwood Ave (Seminole-69th)	8/2/4	1966	1025	28	3189	2006	EG,OL,LB,FM	78	2019	None								2012	
11	Ironwood Ave (Beechnut-Semir	8/2/4	1966	1075	28	3344	2006	EG,OL,LB,FM	72	2016	None								2012	
12	Wilmette Ave (69th-67th)	8/2/4	1966	1442	30	4807	2004	EG,OL,LB,FM	76	2018	None									
13	Wilmette Ave (69th-Hinsbrk)	8/2/4	1966	660	28	2053	2004	EG,OL,LB,FM	76	2018	None									
14	Hinsbrook Avenue	8/2/4	1966	1450	37	5961	2006	TG,OL,FM,LB	83	2021	None									
15	Beechnut Lane	8/2/4	1966	1750	28	5444	2006	TG,OL,FM,LB	82	2021	None									
16	Seminole Drive	8/2/4	1966	3200	37	13156	2005	EG,OL,BR,FM,LB	74	2017	None									
17	Seminole Drive (CDS)	8/2/4	1966	240	40	1067	2009	TG,OL,FM,LB	87	2022	None									
18	Tamarack Drive	8/2/4	1966	2200	28	6844	2012	EG,OL,LB	89	2024	None									
19	Belair Drive	8/2/4	1966	2200	28	6844	2009	TG,B,OL	86	2022	None								2012	
20	Belair Dr (CDS)	8/2/4	1966	160	50	889	2009	TG,FM,OL,LB	86	2022	None								2012	
21	Willow Lane	8/2/4	1966	900	28	2800	2003	EG,OL,LB,FM	79	2020	None							1000	2011	2014
22	Bunker Road	8/2.5/1.5	1966	1000	27	3000	2008	TG,BR,FM,LB,OL	87	2022	CF									
23	Timber Ln (Cass--Darien Ln)	8/2/4	1966	920	28	2862	2004	EG,OL,LB,FM	75	2018	None									
24	Timber Ln (Darien Ln-Richmon	8/2/4	1966	1760	28	5476	2007	EG,OL,LB,FM	84	2021	None								2010	2013
25	Bentley Ave (69th-71st)	8/2/4	1967	1360	28	4231	2001	EG,OL,LB,FM	70	2016	None								2006	
26	Cherokee Dr	8/2/4	1966	1300	28	4044	2000	EG,OL,LB,FM	72	2016	None									
27	Village Court	8/2/4	1966	500	28	1556	2009	TG,B,OL	87	2022	None								2012	
28	Darien Lane	8/2/4	1966	1060	28	3298	2011	TG,LB,FM,OL	88	2024	CF							1000		2014
29	Hickory Lane	8/2/4	1966	1080	28	3360	2007	EG,OL,LB,FM	84	2021	None								2010	2013
30	70th Street (CDS #1)	8/2/4	1967	180	50	1000	2011	EG,OL,LB	88	2024	CF							500		2014
31	70th Street (CDS #2)	8/2/4	1967	180	50	1000	2011	EG,OL,LB	88	2024	CF							500		2014
32	70th Street (CDS #3)	8/2/4	1967	180	50	1000	2011	EG,OL,LB	88	2024	CF							500		2014
33	Maple Lane (CDS #1)	8/2/4	1967	180	50	1000	2012	TG,LB,FM,OL	89	2024	None									
34	Maple Lane (CDS #2)	8/2/4	1967	180	50	1000	2012	TG,LB,FM,OL	89	2024	None									
35	James Peter Ct	8/2/	2006	340	31	1171	2010	BR,OL	87	2022	None								2013	
	TOTAL			49,472.00								0.00	0.00	0.00	0.00	0.00	0.00	7,500.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
VIII	Plainfield Highlands																			
1	72nd Street	NA/1.5/1.5	1940	2000	18	4000	2005	EG,BR,OL,FM,LB	76	2018	None									
2	Bentley Ave (71st-72nd)	NA/1.5/1.5	1940	480	20	1067	2012	TG,BR,FM,LB,OL	89	2024	None									
3	Bentley Ave (72nd-73rd)	NA/1.5/1.5	1940	600	20	1333	2008	TG,BR,FM,LB,OL	84	2021	CF							500	2011	2014
4	73rd Street	NA/1.5/1.5	1940	450	20	1000	2008	TG,BR,FM,LB,OL	85	2022	CF							500	2011	2014
5	Tennessee Avenue	NA/1.5/1.5	1940	980	18	1960	2007	EG, OL,LB,FM	82	2021	None								2010	2013
6	Western Avenue	NA/1.5/1.5	1940	1420	18	2840	2011	TG,FM,OL,LB	88	2024	CF							1500		2014
7	Leonard Drive	8/1.5/1.5	1940	1660	18	3320	2009	TG,FM,OL,LB	87	2022	None								2012	
	TOTAL			7,590.00								0.00	0.00	0.00	0.00	0.00	0.00	2,500.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
IX	Farmingdale Terrace North																			
1	Farmingdale Dr (S-Walnut)	8/2/1.5	1971	600	24	1600	2006	EG,OL,LB,FM	79	2020	None								2010	2013
2	Farmingdale Dr (Walnut-N)	8/2/1.5	1971	600	24	1600	2006	EG,OL,LB,FM	82	2021	None								2010	2013
3	Farmingdale Dr (Walnut-79th)	8/2/1.5	1971	1900	28	5911	2006	EG,OL,LB,FM	79	2020	None								2010	2013
4	Chippewa Lane	8/2/1.5	1971	400	28	1244	2007	TG, OL,LB,FM	83	2021	None								2010	2013
5	Sawyer Rd (Chippewa-Honey)	8/2/1.5	1971	1400	28	4356	2004	EG,OL,LB,FM	73	2017	None									
6	Pine Tree Ln	8/2/1.5	1971	160	28	498	2004	EG,OL,LB,FM	83	2021	None									
7	Honey Locust Ln	8/2.5/1.5	1971	480	28	1493	2009	TG,B,OL	86	2022	None								2012	
8	Dorchester Ln	8/2/1.5	1994	615	28	1913	2013	EG,OL,LB	90	2025	None									
9	Somerset Ln	8/2/1.5	1994	335	28	1042	2013	EG,OL,LB	90	2025	None									
10	Mayfair Ln	8/2/1.5	1994	615	28	1913	2013	EG,OL,LB	90	2025	None									
11	Nantucket Drive	12/2/1.5	1971	2600	37	10689	2010	TG, OL,LB,FM	87	2022	None									2013
	TOTAL			9,705.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
X	**Farmingdale Terrace South**																			
1	Sawyer Rd (79th-Portsmth)	8/2/1.5	1971	2700	28	8400	1998	EG,OL,LB	67	2014	TG,BR,LB,OL	2700	100	756	8400	8400	378			
2	Sawyer Court	8/1/1.5	1971	200	28	622	2008	TG,BR,FM,LB,OL	85	2022	CF							1500	2011	2014
3	Glen Lane	8/2/1.5	1971	1150	28	3578	2007	TG,OL,LB,FM	84	2021	NONE								2013	
4	Portsmouth Drive	8/2/1.5	1971	2100	28	6533	2003	EG,BR,OL,LB,FM	74	2017	NONE								2011	
5	Arrow Lane	8/2/1.5	1971	600	28	1867	2012	TG,BR,FM,LB,OL	89	2024	NONE									
6	Woodland Drive	8/2/1.5	1981	700	30	2333	2000	EG,OL,LB	72	2016	NONE									
7	Farmingdale Dr (Glen-Portsmo	8/2/1.5	1971	1840	28	5724	2002	EG,OL,LB	67	2014	TG,BR,LB,OL	1840	100	515	5724	5724	257.6		2013	
8	Wittington Ct	8/1/1.5	1993	345	28	1073	2008	TG,BR,FM,LB,OL	85	2022	CF							500	2011	2014
XI	**High Point Circle**																			
1	High Point Circle	8/2/1.5	1988	1050	30	3500	2003	EG,OL,LB,FM	75	2018	NONE								2012	
	TOTAL			10,685.00								4,540.00	200.00	1,271.20	14,124.44	14,124.44	635.60	2,000.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
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		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XII	Farmingdale Terrace West																			
1	Comstock Lane	8/2/1.5	1971	900	28	2800	2012	EG,OL,LB	89	2024	None									2015
2	Walnut Dr (942-Farmingdale)	8/2/1.5	1971	1100	28	3422	2006	EG,OL,LB,FM	80	2020	None								2012	2015
3	Hayenga Lane	8/2/1.5	1971	980	28	3049	2012	EG,OL,LB	89	2024	None									2015
4	Andermann Lane	8/2/1.5	1971	660	28	2053	2012	EG,OL,LB	89	2024	None									2015
5	Baker Court	8/2/1.5	1971	640	28	1991	2012	EG,OL,LB	89	2024	None									2015
6	Del Court	8/2/1.5	1971	400	28	1244	2012	TG,OL,LB,FM	89	2024	None									2015
																				2015
	TOTAL			4,680.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XIII	Brookhaven #1																			
1	Stratford Place	12/1..5/1.5	1971	1800	28	5600	2010	TG,BR,FM,LB,OL	87	2022	None								2013	
2	Juniper Ln (Warwick-E)	10/2.5/1.5	1940	300	18	600	2009	TG,B,OL,PGE	86	2022	None								2012	
3	Juniper Ln (Stratford-W)	12/2.5/1.5	1940	180	28	560	2009	TG,B,OL	86	2022	None								2012	
4	Walnut Dr (Warwick-942)	NA/1.5/1.5	1940	200	18	400	2006	EG,OL,LB,FM	82	2021	None									
5	Brookhaven Avenue	NA/1.5/1.5	1940	1320	18	2640	2005	EG,OL,LB,FM	73	2017	None									
6	Janet Ave (Warwick-E)	NA/1/1.5	1940	560	20	1244	2009	TG,OL,LB,FM	86	2022	None								2012	
7	Janet Ave (Gail-Warwick)	NA/2.5/1.5	1940	420	20	933	2009	TG,OL,B,BR	86	2022	None								2012	
8	Linden Avenue	10/0/1.5	1940	1420	18	2840	2010	TG,BR,FM,LB,OL	87	2022	None									
9	Gail Avenue	NA/1.5/1.5	1940	1240	18	2480	2005	EG,OL,LB,FM	72	2017	None									
10	79th St (Cass-Sawyer)	NA/1.5/1.5	1940	4160	37	17102	2002	EG,OL,LB,FM,BR	75	2018	None								2012	
11	Country Lane	8/1/1.5	1968	1200	28	3733	2007	TG,OL,LB,FM	86	2022	None								2013	
12	Warwick Dr	5/2/1.5	1940	1900	20	4222	2009	TG,OL,LB,BR,FM	87	2022	None								2012	
13	Concord Dr (Cass -Chalet)	8/2.5/1.5	1968	250	48	1333	2009	TG,B,OL	86	2022	None								2012	
14	Concord Dr (Chalet-Limit)	8/2.5/1.5	1968	300	28	933	2009	TG,B,OL	86	2022	None								2012	
15	Chalet Dr	8/2.5/1.5	1968	600	30	2000	2009	TG,FM,LB,OL	86	2022	None								2012	
	TOTAL			15,850.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XIV	Darien Club																			
1	Darien Club Drive	9/1.5/1.5	1989	5920	27	17760	2008	TG,BR,FM,LB,OL	85	2022	CF							3000	2011	2014
2	Clare Court	9/1.5/1.5	1992	360	28	1120	2012	TG,BR,FM,LB,OL	89	2024	None									
3	Bantry Ct	9/1.5/1.5	1992	200	27	600	2012	TG,BR,FM,LB,OL	89	2024	None									
4	Galway Ct	9/1.5/1.5	1989	480	28	1493	2011	TG,BR,FM,LB,OL	88	2024	CF							300		2014
5	Limerick Ct	9/1.5/1.5	1989	600	28	1867	2011	TG,BR,FM,LB,OL	88	2024	CF									
6	Clover Ct	9/1.5/1.5	1989	350	28	1089	2012	NEW CONS	89	2024	None									
7	Irish Ct	9/1.5/1.5	1989	350	28	1089	2012	NEW CONS	89	2024	None									
8	Sweetbriar Ln	9/2.5/1.5	1989	2000	30	6667	2008	TG,BR,FM,LB,OL	86	2022	CF							2000		
9	Discosola Ct	9/1.5/1.5	2004	350	27	1050	2004	NEW CONS	76	2018	CF							700	2011	2014
10	Kelly Ct	9/1.5/1.5	1994	650	28	2022	2011	TG,BR,FM,LB,OL	87	2022	CF							500		2014
11	Allison Ln	9/1.5/1.5	1989	335	30	1117	2012	NEW CONS	89	2024	None									
12	Exner Rd (DC-Holly)	9/1.5/1.5	1992	465	37	1912	2006	EG,OL,	82	2021	CF								2012	2015
13	Hudson St	8/1.5/1.5	1970	580	28	1804	2000	EG,OL,	77	2019	None									
	TOTAL			12,640.00								0.00	0.00	0.00	0.00	0.00	0.00	6,500.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XV	Farmingdale Unit 5, 6, 7, 8, 9																			
1	71st St (Washington-1722)	8/1.5/1.5	1975	2500	37	10278	2005	EG,OL,LB,FM,BR	74	2017	NONE								2012	
2	71st St (1722-West)	8/1.5/1.5	1975	1340	27	4020	2005	EG,OL,LB,FM,BR	75	2018	NONE								2012	
3	Wilcox Avenue	8/1.5/1.5	1972	625	28	1944	2013	TG,OL,LB	90	2025	NONE									
4	Holly Av	8/1.5/1.5	1968	3300	28	10267	2006	EG,OL,LB,FM	79	2020	NONE								2012	
5	McAdam Rd	8/1.5/1.5	1972	980	28	3049	2013	EG,OL,LB	90	2025	NONE									
6	Exner Rd (Holly-71st)	8/1.5/1.5	1972	850	37	3494	2006	EG,OL,LB,FM	82	2021	NONE								2012	
7	Exner Rd (71st-75th)	8/1.5/1.5	1975	3000	37	12333	2006	EG,OL,LB,FM	82	2021	NONE								2012	
8	Claremont Dr	8/1.5/1.5	1968	1232	28	3833	2007	EG,OL,LB	85	2022	NONE								2010	2013
9	Emerson Dr	8/2.5/1.5	1972	1460	28	4542	2009	TG,B,OL	86	2022	NONE								2012	
10	Whittier Dr	8/1/1.5	1972	660	28	2053	2009	TG,OL,LB	86	2022	NONE								2012	
11	73rd St	8/1.5/1.5	1972	1830	28	5693	2002	EG,OL,LB,FM	72	2016	NONE								2010	2013
12	Park Ave	8/1.5/1.5	1972	1200	28	3733	2005	EG,OL,LB,FM	77	2019	NONE									
13	Shelley Ct	8/1.5/1.5	1972	450	28	1400	2005	EG,OL,LB,FM	78	2019	NONE									
14	Carrol Ct	8/1.5/1.5	1972	450	28	1400	2005	EG,OL,LB,FM	79	2020	NONE									
15	Adams	8/1.5/1.5	1967	600	28	1867	2007	EG,OL,LB,FM	85	2022	NONE								2010	2013
16	Exner Ct	8/1.5/1.5	1975	160	28	498	2012	TG,OL,LB,FM	89	2024	NONE									
17	Arbor Ct	8/1.5/1.5	1975	340	28	1058	2007	EG,OL,LB,FM	84	2021	NONE								2010	2013
18	Bayberry Ln	8/1.5/1.5	1975	1160	30	3867	2008	EG,OL,LB	86	2022	CF							3000	2011	2014
19	Clemens Rd	8/1.5/1.5	1975	1120	28	3484	2007	EG,OL,LB,FM	84	2021	NONE								2010	2013
20	Carrol Ln	8/1.5/1.5	1972	200	28	622	1998	TG,OL,LB,FM	67	2014	TG,BR,FM,LB,OL	200	50.0	56	622	622	28			
21	Summit Rd	8/1.5/1.5	1975	2240	28	6969	2006	EG,OL,LB,FM	82	2021	NONE								2012	
22	Walden Ln	8/2.5/1.5	1975	1320	30	4400	2008	TG,B,OL	86	2022	CF							1500	2011	2014
23	Williams St (Holly-Claremont)	8/1.5/1.5	1968	280	28	871	2010	TG,OL,LB,FM	87	2022	NONE									2013
	TOTAL			27,297								200.00	50.00	56.00	622.22	622.22	28.00	4,500.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
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		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XVI	Downers Fairview																			
1	Wirth Ln	8/1.5/1.5	1968	1460	27	4380	2000	EG,OL,LB,FM	68	2015	TG,BR,LB,OL	1460	100	394	4380	4380	197.1			
2	Gigi Ln	8/1.5/1.5	1968	2300	36	9200	2001	EG,OL,LB,FM	72	2016	NONE								2006	
3	Richard Rd	8/1.5/1.5	1968	720	27	2160	2013	TG,BR,FM,OL,LB	90	2025	NONE									
4	72nd St	8/1.5/1.5	1968	800	27	2400	2011	EG,OL,LB	88	2024	CF							500		2014
5	Gold Grove Dr	8/1.5/1.5	1968	1160	27	3480	2005	EG,OL,LB,FM	74	2017	NONE									
6	Howdy Ln	8/1.5/1.5	1968	540	27	1620	2013	TG,BR,FM,OL,LB	90	2025	NONE									
	TOTAL			6,980.00								1,460.00	100.00	394.20	4,380.00	4,380.00	197.10	500.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
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		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XVII	Brookhaven #2																			
1	Grant St	8/2.5/1.5	1950	1000	30	3333	2008	TG,BR,FM,LB,OL	85	2022	CF							1000	2011	2014
2	Adams St	8/1.5/1.5	1950	1300	28	4044	2002	EG,BR,OL,LB,FM	73	2017	NONE								2013	
3	77th St (Knott-Wlms)	8/1.5/1.5	1950	400	28	1244	2000	EG,OL,BL,FM	76	2018	NONE									
4	77th St (Wlms-Adams)	8/1.5/1.5	1950	1500	28	4667	2010	EG,OL,LB	87	2022	NONE								2013	
5	Sequoia Ln	8/1.5/1.5	1950	1500	28	4667	2004	EG,OL,LB,FM	74	2017	NONE								2012	
6	Hawthorne Pl	8/1.5/1.5	1974	330	28	1027	2005	EG,OL,LB,FM	81	2020	NONE									
7	Stevens St	8/1.5/1.5	1974	540	28	1680	2005	EG,OL,LB,FM	79	2020	NONE									
8	Williams St (1-77th-2-77th)	8/2/1.5	1966	350	37	1439	2004	EG,OL,LB,FM	79	2020	NONE								2012	
9	Williams St (7612)	8/2/1.5	1966	75	37	308	2004	EG,OL,LB,FM	79	2020	NONE								2012	
10	Williams (7520)	8/2/1.5	1966	75	20	167	2004	EG,OL,LB,FM	79	2020	NONE								2012	
11	Williams (1 Elizabeth)	8/2/1.5	1966	210	20	467	2004	EG,OL,LB,FM	79	2020	NONE								2012	
	Norman Court																			
7	Norman Drive	8/1.5/1.5	1989	1470	27	4410	2008	TG,BR,FM,LB,OL	85	2022	CF							800	2011	2014
	Brittany Court	8/1.5/1.5	1989	530	27	1590	1992	New Const	67	2014	TG,BR,LB,OL	530	50	143	1590	1590	72			
	Coventry Court	8/1.5/1.5	1989	640	27	1920	1992	New Const	67	2014	TG,BR,LB,OL	640	50	173	1920	1920	86			
	Canterbury Court	8/1.5/1.5	1989	395	27	1185	1992	New Const	67	2014	TG,BR,LB,OL	400	50	107	1185	1185	53			
	TOTAL			10,315.00								1,570.00	150.00	422.55	4,695.00	4,695.00	211.28	1,800.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XVIII	Knottingham																			
1	Florence Ave	8/1.5/1.5	1956	1250	28	3889	2013	TG,BR,FM,OL,LB	90	2025	NONE									
2	Center Cir	8/1.5/1.5	1956	190	28	591	2013	TG,BR,FM,OL,LB	90	2025	NONE									
3	Gordon Ct	8/1.5/1.5	1956	190	28	591	2013	TG,BR,FM,OL,LB	90	2025	NONE									
4	Knottingham Ln (7709-77621)	8/1.5/1.5	1966	428	28	1332	2012	B,OL	89	2024	NONE									
5	Baimbridge Dr(7625-7621)	8/1.5/1.5	1966	166	28	516	2012	B,OL	89	2024	NONE									
6	Elizabeth Ln (One)	8/1.5/1.5	1966	100	28	311	2012	B,OL	89	2024	NONE									
7	Redondo Ct	10/2/2001	1994	409	27	1227	2013	TG,BR,FM,OL,LB	90	2025	NONE									
	TOTAL			2,733.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XVIV	Farm-Ridge																			
1	Manning Rd (Lyman-Brunswick)	10/2/1.5	1997	2500	32	8889	1997	Reconst&Widen	73	2017	NONE									
2	Manning Rd (Limit-Limit)	10/2/1.5	1997	2000	32	7111	1997	Reconst&Widen	73	2017	NONE									
3	Fairview Ave	10/1.5/1.5	1989	1400	37	5756	2003	EG,OL,LBFM	82	2021	NONE								2011	
4	Judd St	10/1/1.5	1989	475	30	1583	2009	TG,OL,LB,FM	85	2022	NONE								2012	
5	Wilton Rd	10/1/1.5	1989	1050	30	3500	2009	TG,OL,LB,FM	85	2022	NONE								2012	
6	Harper Rd	10/1/1.5	1989	450	30	1500	2009	TG,OL,LB,FM	84	2021	NONE								2012	
7	Exton St	10/1/1.5	1989	550	30	1833	2009	TG,OL,LB,FM	84	2021	NONE								2012	
8	Green Valley Ct	9/2/1	1979	500	30	1667	2011	EG,OL,LB	88	2024	CF							500		2014
9	Brunswick Rd	9/2/1	1979	765	30	2550	1999	EG,OL,LB	65	2014	TG,BR,LB,OL	765	50	230	2550	2550	115			
10	Brompton Dr	9/2/1	1979	585	30	1950	1999	EG,OL,LB	65	2014	TG,BR,LB,OL	1950	200	176	1950	1950	88			
11	Dartmouth Ln	9/2/1	1979	325	30	1083	1999	EG,OL,LB	65	2014	TG,BR,LB,OL	600	50	98	1083	1083	49			
12	Carlton Rd	9/2/1	1979	845	30	2817	1999	EG,OL,LB	65	2014	TG,BR,LB,OL	845	50	254	2817	2817	127			
13	Hamilton Ln	9/2/1	1979	360	30	1200	2004	EG,OL,LB,FM	74	2017	NONE									
14	Danbury Dr	9/2/1	1979	540	30	1800	2004	EG,OL,LB,FM	74	2017	NONE									
15	Barclay Rd	9/2/1	1979	870	30	2900	2005	EG,OL,LB,FM	82	2021	NONE									
16	Bedford Ln	9/2/1	1978	330	30	1100	2005	EG,OL,LB,FM	81	2020	NONE									
17	Surrey Dr	9/2/1	1978	700	30	2333	2003	EG,OL,LB,FM	81	2020	CF							1000	2011	2014
18	Lyman Av	9/2/1	1978	945	30	3150	2000	EG,OL,LB,FM	77	2019	NONE									
19	Wakefield Dr	9/2/1	1978	1460	30	4867	2011	TG,OL,LB,FM	88	2024	CF									
20	Marlborough Ln	9/2/1	1978	995	30	3317	2005	EG,OL,LB,FM	82	2021	NONE									
21	Aylesbury Ln	9/2/1	1978	335	30	1117	2001	EG,OL,LB,FM	71	2016	NONE								2006	
22	Cambridge Rd	9/2/1	1978	1090	30	3633	1998	EG,OL,LB	68	2015	TG,BR,LB,OL	1090	50	327	3633	3633	164			
23	Abbey Dr	9/2/1	1978	640	30	2133	2001	EG,OL,LB,FM	78	2019	NONE								2006	
24	Main St	9/2/1	1978	1020	27	3060	2009	TG,OL,LB,FM	85	2022	NONE								2012	
25	Green Valley Rd	9/2/1	1979	2900	30	9667	2011	TG,OL,LB,FM	88	2024	CF							2500		2014
26	Lyman Ave (75th-Manning)	12/2/1.5	1991	1350	37	5550	2010	TG,OL,LB,FM	87	2022	NONE								2013	
	TOTAL			24,980.00								5,250.00	400.00	1,083.00	12,033.33	12,033.33	541.50	4,000.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XX	Woodmere																			
1	Woodmere Dr	9/1.5/1.5	1996	1218	30	4060	2001	TG,OL,LB,FM	72	2016	NONE								2006	
2	Curran Ct	9/1.5/1.5	1996	225	24	600	2001	NEW CONST	72	2016	NONE								2006	
3	Windsor Dr	9/1.5/1.5	1996	995	30	3317	2001	NEW CONST	72	2016	NONE								2006	
4	Morgan Ct	9/1.5/1.5	1996	200	29	644	2001	NEW CONST	72	2016	NONE								2006	
5	Windsor Ct	9/1.5/1.5	1996	107	99	1177	2001	NEW CONST	72	2016	NONE								2006	
6	Whitlock Dr	9/1.5/1.5	1996	680	30	2267	2001	NEW CONST	72	2016	NONE								2006	
7	Oxford Dr	9/1.5/1.5	1996	276	30	920	2001	NEW CONST	72	2016	NONE								2006	
8	Oxford Ct	9/1.5/1.5	1996	312	25	867	2001	TG,OL,LB,FM	72	2016	NONE								2006	
9	Cameron Ct	9/1.5/1.5	1996	212	30	707	2001	NEW CONST	72	2016	NONE								2006	
10	Hedgewood Dr	9/1.5/1.5	1996	616	30	2053	2001	NEW CONST	72	2016	NONE								2006	
	TOTAL			4,841.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXI	Farmingdale Village																			
1	Parkview Dr	8/1.5/1.5	1973	1310	28	4076	2003	EG,OL,LB,FM	84	2021	NONE								2011	
2	Drover Ln	8/1.5/1.5	1973	3930	28	12227	2011	TG,BR,FM,LB,OL	90	2025	NONE									
3	Drover Ct	8/1.5/1.5	1973	330	28	1027	2007	EG,OL,LB,FM	82	2021	CF								2010	2013
4	Grandview Pl	8/1.5/1.5	1973	1500	28	4667	2003	EG,OL,LB,FM	83	2021	NONE									
5	Grandview Ln	8/1.5/1.5	1973	370	33	1357	2003	EG,OL,LB,FM	80	2020	NONE								2011	
6	Dixon Ct	8/1.5/1.5	1978	425	28	1322	1998	EG,OL,LB	74	2017	TG,BR,LB,FM,OL	450	50.0	119	1322	1322	59.5			
7	Beller Dr	10/1.7/1.5	1973	4870	30	16233	2010	TG,BR,FM,LB,OL	87	2022	CF							6000		2013
8	Brewer Rd	8/1.5/1.5	1978	2150	28	6689	2011	TG,BR,FM,LB,OL	88	2024	NONE									
9	Cramer Ln	8/1.5/1.5	1978	480	28	1493	2012	TG,BR,FM,LB,OL	89	2024	NONE									
10	Alden Ln	8/1.5/1.5	1978	760	28	2364	2012	TG,BR,FM,LB,OL	89	2024	NONE									
11	Burgess Pl	8/1.5/1.5	1978	390	28	1213	2012	TG,BR,FM,LB,OL	89	2024	NONE									
12	Gilbert Ct	8/1.5/1.5	1978	330	28	1027	2000	EG,OL,LB,FM	70	2016	NONE									
13	Ailsworth Dr	11/1.7/1.5	1977	1420	28	4418	2010	TG,BR,FM,LB,OL	87	2022	NONE								2013	
14	Ailsworth Ct	11/1.7/1.5	1977	535	28	1664	2010	TG,BR,FM,LB,OL	85	2022	NONE								2013	
15	Pitcher Dr	8/1/1.5	1977	860	30	2867	2008	TG,BR,FM,LB,OL	85	2022	NONE									
16	Clifford Rd	8/1/1.5	1977	660	30	2200	2008	TG,BR,FM,LB,OL	85	2022	NONE									
17	Stewart Rd	8/1/1.5	1977	860	30	2867	2008	TG,BR,FM,LB,OL	85	2022	NONE									
18	Havens Dr	8/1/1.5	1977	360	28	1120	2004	EG,OL,LB,FM	76	2018	NONE									
19	Downers Dr	8/0/4	1997	150	23	383	2010	TG,BR,FM,LB,OL	87	2022	NONE								2013	
20	Woodvale Dr	8/1.5/1.5	1974	1270	28	3951	2013	EG,OL,LB	90	2025	NONE									
21	Beller Ct	8/1.5/1.5	1974	485	28	1509	2013	EG,OL,LB	90	2025	NONE									
22	Highcrest Dr	8/1.5/1.5	1974	765	28	2380	2013	EG,OL,LB	90	2025	NONE									
23	Hillside Ln (Meadow-Woodvale)	8/1.5/1.5	1974	1625	28	5056	2012	TG,BR,FM,LB,OL	88	2024	NONE									
24	Hillside Ct	8/1.5/1.5	1974	180	28	560	2006	EG,OL,LB,FM	81	2020	NONE								2012	
25	Meadow Ln	8/1.5/1.5	1974	1250	28	3889	1999	EG,OL,LB	67	2014	TG,BR,LB,FM,OL	1250	50.0	350	3889	3889	175			
26	Harvest Pl	8/1.5/1.5	1974	1230	28	3827	2006	EG,OL,LB,FM	79	2020	NONE								2012	
27	Meadow Ct	8/3/1.5	1974	340	28	1058	2009	TG,B,OL	87	2022	NONE								2012	
28	Pearson Dr	10/2.5/1.5	1988	920	28	2862	2009	TG,B,OL	86	2022	NONE								2012	
29	Water Tower Ln	10/2/1	1988	340	28	1058	2012	TG,BR,FM,LB,OL	89	2024	NONE									
30	Sandalwood Dr	10/2/1	1988	600	28	1867	2012	TG,BR,FM,LB,OL	89	2024	NONE									
31	Aster Ln	10/2.5/1.5	1988	340	28	1058	2009	TG,B,OL	86	2022	NONE								2012	
32	Sandalwood Ct	9/1.5/1.5	1992	600	28	1867	2011	TG,B,OL	88	2024	NONE									
33	Chicory Ct	9/2.5/1.5	1992	700	28	2178	2009	TG,B,OL	86	2022	NONE								2012	
34	Spring Green Dr	8/2/1.5	1973	1165	28	3624	2003	EG,OL,LB,FM	79	2020	NONE							2000	2011	2014
35	83rd St (Lemont-Dunham)	8/2/1.5	1950	1000	28	3111	1996	EG,OL,LB	71	2016	Partal WoodRidge									
36	83rd St (Beller-Grandview)	8/2/1.5	1950	1000	28	3111	1996	EG,OL,LB	71	2016	Partal WoodRidge									
37	Hillside Ln (Pearson-Meadow)	8/2/1.5	1974	250	28	778	2009	TG,BR,FM,LB,OL	86	2022	NONE									
	TOTAL			35,750.00								1,700.00	100.00	469.00	5,211.11	5,211.11	234.50	8,000.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXII	Carriage Hill																			
1	Oldfield Rd (Frontage 1400')	8/1.5/1.5	1930	1400	20	3111	2004	EG,OL,LB,FM,BR	67	2014	TG,BR,LB,FM,OL	1400	under cuts	280	3111	3111	140			
2	Oldfield Rd (675')	8/1.5/1.5	1930	675	40	3000	2004	EG,OL,LB,FM,BR	67	2014	TG,BR,LB,FM,OL	675	under cuts	270	3000	3000	135			
3	Oldfield Rd (800')	8/1.5/1.5	1930	800	20	1778	2004	EG,OL,LB,FM,BR	67	2014	TG,BR,LB,FM,OL	800	under cuts	160	1778	1778	80			
4	Robert Rd (Oldfield-Donegal)	8/1.5/1.5	1989	720	30	2400	2012	TG,BR,FM,OL,LB	89	2024	NONE									
5	Shannon Ct	8/1.5/1.5	1989	325	30	1083	2012	TG,BR,FM,OL,LB	89	2024	NONE									
6	Donegal Dr	8/1.5/1.5	1989	1254	30	4180	2012	TG,OL,B,LB,FM	89	2024	NONE									
7	87th St (Lemont-Washington)	8/1.5/1.5	1940	2250	20	5000	Annex	EG,OL,LB,FM,BR	67	2014	TG,BR,LB,FM,OL	2250	100.0	450	5000	5000	225			
8	Andrus Rd (Frontage to 66)	8/1.5/1.5	1940	200	20	444	2004	EG,OL,LB,FM	67	2014	TG,BR,LB,FM,OL	200	100.0	40	444	444	20			
9	Andrus Rd (Oldfield to 66)	8/1.5/1.5	1940	300	20	667	Annex	EG,OL,LB,FM	67	2014	TG,BR,LB,FM,OL	300	200.0	60	667	667	30			
	TOTAL			7,924.00								5,625.00	400.00	1,260.00	14,000.00	14,000.00	630.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXIII	Tara Hill																			
1	Dunmore Dr	8/1.5/1.5	1989	1000	30	3333	2013	TG,BR,FM,LB,OL	90	2025	NONE									
2	Tara Hill Rd	8/1.5/1.5	1989	1300	30	4333	2013	TG,BR,FM,LB,OL	90	2025	NONE									
3	Carlow Dr	8/1.5/1.5	1989	1500	30	5000	2013	TG,BR,FM,LB,OL	90	2025	NONE									
4	Brandon Rd	8/1.5/1.5	1989	1060	30	3533	2013	TG,BR,FM,LB,OL	90	2025	NONE									
5	Kerry Ln	8/1.5/1.5	1989	660	30	2200	2013	TG,BR,FM,LB,OL	90	2025	NONE									
6	Middleton Rd	8/1.5/1.5	1989	1060	30	3533	2013	TG,BR,FM,LB,OL	90	2025	NONE									
7	Kilkenny Dr	8/1.5/1.5	1989	1200	30	4000	2013	TG,BR,FM,LB,OL	90	2025	NONE									
	TOTAL			7,780.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XX1V	Carriage Greens #4																			
1	Royal Swan Ln	9/1.5/1.5	1990	1250	27	3750	2001	EG,OL,LB,FM	71	2016	NONE								2006	
2	Black Swan Ct	9/1.5/1.5	1990	200	27	600	1997	EG,OL,LB	70	2016	NONE									
3	Lake Ridge Dr	9/1.5/1.5	1990	1630	27	4890	2004	EG,OL,LB,FM	76	2018	NONE									
4	Gleneagles Ln	10/1.5/1.5	1988	720	27	2160	2007	EG,OL,LB,FM	84	2021	NONE								2013	
5	Gleneagles Ln (Bubbles)	10/1.5/1.5	1988	270	20	600	2007	EG,OL	84	2021	NONE								2013	
6	Carlisle Ct	6/6/	1979	1820	30	6067	2005	TG,OL,LB,FM,BR	78	2019	NONE									
7	Kimberly Ct	6/6/	1979	360	30	1200	2005	TG,OL,LB,FM,BR	80	2020	NONE									
8	Kentwood Ct	6/6/	1979	1060	30	3533	2005	TG,OL,LB,FM,BR	77	2019	NONE									
	TOTAL			7,310.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXV	**Brookeridge**																			
1	86th St	6/1.5/1.5	1978	500	30	1667	2007	EG, OL,LB,FM	84	2021	NONE								2010	2013
2	Creekside Ln	6/1.5/1.5	1978	2500	28	7778	2013	EG, OL,LB,FM	90	2025	NONE								2006	
3	Woodview Ct	6/1.5/1.5	1978	360	30	1200	2007	EG,OL,BR,LB,TM	84	2021	NONE								2010	2013
4	Kentwood Ct (CDS)	6/2/2.0	1978	500	30	1667	2011	EG,OL,LB	88	2024	CF							500		2014
5	Kearney Rd (Creekside Ln N 7	6/ /1.5	1940	770	27	2310	2007	BR,EG,OL,LB,FM	82	2021	NONE								2010	2013
	TOTAL			4,630.00								0.00	0.00	0.00	0.00	0.00	0.00	500.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXVI	Carriage Greens 1 & 2																			
1	Carr Greens Dr (Frontage-Old Oak)	10/ /2	1968	200	20	444	2013	EG,OL,LB	90	2025	NONE									
2	Carr Greens Dr (Frontage-Old Oak)	10/ /2	1968	200	20	444	2013	EG,OL,LB	90	2025	NONE									
3	Carr Green Dr (Old Oak-Coachman)	10/ /2	1968	1440	37	5920	2013	EG,OL,LB	90	2025	NONE									
4	Carr Green Dr (Coachman-end)	10/ /2.5	1972	1260	25	3500	2013	EG,OL,LB	90	2025	NONE									
5	Old Oak Pl	8/ 2.5 /1.5	1968	700	25	1944	2009	TG,B,OL	82	2021	NONE								2012	
6	Old Oak Pl (East of CG)	8/ 2.5 /1.5	1989	250	30	833	2009	TG,B,OL	86	2022	NONE								2012	
7	Royal Oak Rd	8/ 2.5 /1.5	1968	800	25	2222	2009	TG,B,OL	86	2022	NONE								2012	
8	Royal Oak Rd (East of CG)	6/ 1/1.5	1989	350	30	1167	2006	EG,OL,LB,FM	84	2021	NONE								2012	
9	Coachmans Rd	10/ /2.5	1972	880	37	3618	2013	EG,OL,LB,FM	90	2025	NONE								2007	
10	Gleneyre Rd	10/ /2.5	1972	1100	25	3056	2013	EG,OL,LB,FM	90	2025	NONE								2007	
11	Heather Ln	6/ /1.5	1968	800	25	2222	2013	EG,OL,LB,FM	90	2025	NONE								2007	
12	Fox Hill Pl	6/ /1.5	1968	720	25	2000	2011	TG,OL,LB,FM	88	2024	CF							500		2014
13	Laurel Ln	6/ /1.5	1968	350	25	972	2006	TG,OL,LB,FM	83	2021	NONE								2013	
	TOTAL			9,050.00								0.00	0.00	0.00	0.00	0.00	0.00	500.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXVII	Carriage Greens 3																			
1	Evergreen Lane	8/2/1.5	1986	2613	28	8129	2001	EG,OL,LB,FM	69	2015	NONE								2006	
2	Thistlewood Ln	10/1.5/1.5	1987	1125	30	3750	2010	TG,OL,LB,FM	87	2022	NONE								2013	
3	Willowcreek Ln	8/2/1.5	1986	990	28	3080	2003	EG,OL,LB,FM	78	2019	CF							1000	2011	2014
4	Winterberry Ln	8/2/1.5	1986	780	28	2427	2003	EG,OL,LB,FM	80	2020	CF							1000	2011	2014
5	Evergreen Ct	8/2/1.5	1986	220	30	733	2009	TG.B.OL	86	2022	NONE								2012	
	TOTAL			5,728.00								0.00	0.00	0.00	0.00	0.00	0.00	2,000.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXVIII	Pinehurst																			
1	Pinehurst Dr	8/2.5/1.5	1988	1510	28	4698	2009	TG,B,OL	86	2022	NONE								2012	
2	Pine Bluff Ct	8/2.5/1.5	1988	333	35	1295	2009	TG,B,OL	86	2022	NONE								2012	
3	Pine Cove Ct	8/2.5/1.5	1988	340	34	1284	2009	TG,B,OL	86	2022	NONE								2012	
4	Pine View Ct	8/2.5/1.5	1988	600	35	2333	2009	TG,B,OL	86	2022	NONE								2012	
5	Pinehurst (CDS)	8/2.5/1.5	1988	200	28	622	2009	TG,B,OL	86	2022	NONE								2012	
	TOTAL			2,983.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXIX	Sawmill Creek																			
1	Oakley Dr	9/1./1.5	1978	500	30	1667	2008	TG,BR,FM,LB,OL	85	2022	CF							1000	2011	2014
2	Golfview Dr	9/1./1.5	1978	800	30	2667	2008	TG,BR,FM,LB,OL	85	2022	CF							1000	2011	2014
3	Sawmill Creek Dr	9/1./1.5	1978	920	30	3067	2008	TG,BR,FM,LB,OL	85	2022	CF							2000	2011	2014
4	Dickens Cir	9/1./1.5	1978	440	30	1467	2008	TG,BR,FM,LB,OL	85	2022	CF							1000	2011	2014
	TOTAL			2,660.00								0.00	0.00	0.00	0.00	0.00	0.00	5,000.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXX	Devonshire																			
1	Knottingham Cir	8/2/1.5	1983	1800	30	6000	1999	EG,OL,LB,FM	65	2014	TG,BR,LB,OL	1800	100.0	540	6000	6000	270			
2	Ashley Ct	8/2/1.5	1983	225	30	750	2010	TG,OL,LB,FM	87	2022	NONE									
3	Durham Cir	8/2/1.5	1983	300	30	1000	2010	TG,OL,LB,FM	87	2022	NONE									
	TOTAL			2,325.00								1,800.00	100.00	540.00	6,000.00	6,000.00	270.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXXI	Bailey Park																			
1	Bailey Rd	9/1.5/1.5	1988	5550	34	20967	2007	EG,OL,LB,FM	82	2021	NONE								2013	
2	Stewart Dr	9/1.5/1.5	1988	1400	27	4200	2012	TG,OL,LB,FM	89	2024	NONE									
3	Barrymore Dr	9/1.5/1.5	1988	1500	27	4500	2012	TG,OL,LB,FM	89	2024	NONE									
4	Lakeview Dr	14/2/1.5	1978	3800	37	15622	2010	TG,OL,LB,FM	86	2022	NONE								2013	
	TOTAL			12,250.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXXII	Marco Estates																			
1	Marco Ct	10/1.5/1.5	2000	500	30	1667	2004	New Const.	78	2019	NONE								2013	
XXXIII	Smart Oaks Glen																			
1	Chapman Ct	10/1.5/1.5	1997	800	24	2133	1999	New Const.	70	2016	NONE									
2	Chapman Dr	10/1.5/1.5	1997	800	27	2400	1999	New Const.	70	2016	NONE									
3	Adams St	10/1.5/1.5	1992	620	27	1860	1996	New Const.	70	2016	NONE									
4	Von Drash Dr	10/1.5/1.5	1992	450	27	1350	1996	New Const.	71	2016	NONE									
5	Urban Dr	10/1.5/1.5	1992	475	27	1425	1996	New Const.	72	2016	NONE									
6	Westminster Ct	10/1.5/1.5	1986	440	30	1467	2007	EG,OL,LB,FM	82	2021	NONE								2013	
	TOTAL			4,085.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXXIV	Farmingdale South																			
1	Greenbriar Ln	8/1.5/1	1960	1200	28	3733	2013	EG,OL,LB	90	2025	NONE									
2	Pine Ct	8/1.5/1	1960	600	28	1867	2012	EG,OL,LB	89	2024	NONE									
3	Adams St	8/2/1.5	1960	1000	28	3111	2010	TG,OL,LB,FM	86	2022	NONE								2113	
4	Iroquois St	8/1.5/1	1960	1040	28	3236	2013	EG,OL,LB	90	2025	NONE									
5	Sleepy Hollow Ln	8/1.5/1	1960	1100	28	3422	2012	EG,OL,LB,FM	89	2024	NONE									
6	Grant St	8/1.5/1	1960	660	28	2053	2013	EG,OL,LB	90	2025	NONE									
7	Sleepy Hollow Ln (CDS)	8/1.5/1	1960	200	28	622	2011	TG,OL,LB,FM	88	2024	CF									
70	Grant St (CDS)	8/1.5/1	1960	300	28	933	2013	EG,OL,LB,FM	90	2025	NONE							500		2014
	TOTAL			6,100.00								0.00	0.00	0.00	0.00	0.00	0.00	500.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXXV	Pine Parkway																			
1	Pine Parkway	6/1.5/1	1969	900	20	2000	2007	BR,EG,OL,FM,LB	83	2021	NONE								2013	
2	Pine Parkway	6/1.5/1	1969	900	20	2000	2007	BR,EG,OL,FM,LB	83	2021	NONE								2013	
3	Adams St	6/2/1.5	1940	840	18	1680	2009	TG,OL,LB,FM	86	2022	NONE								2012	
XXXVI	Regency Grove																			
1	Regency Grove Dr	8/1/1.5	1978	2000	28	6222	2009	TG,OL,LB,FM	86	2022	NONE								2012	
2	Wildwood Ct	8/1/1	1978	400	28	1244	2006	TG,OL,LB,FM	84	2021	NONE									
3	Adams St	8/1/1.5	1978	300	28	933	2009	TG,OL,LB,FM	86	2022	NONE								2012	
	TOTAL			5,340.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	YEAR	2014	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXXVII	Hidden Lakes																			
1	Hinswood Dr	8/1/1.5	1968	1120	37	4604	2008	TG,BR,FM,LB,OL	82	2021	CF							2000	2011	2014
2	Sweetwater Ct	12/2/1.5	1993	400	28	1244	2013	TG,BR,FM,LB,OL	90	2025	NONE									
3	Ripple Ridge Dr	12/2/1.5	1993	2750	28	8556	2010	TG,BR,FM,LB,OL	87	2022	NONE								2013	
4	Mystic Trace	12/2/1.5	1993	970	28	3018	2010	TG,BR,FM,LB,OL	87	2022	NONE								2013	
5	Wilmette Ave	12/2/1.5	1993	824	17	1556	1994	BUILDER	70	2016	NONE									
6	Captons Ln	9/1.5/1.5	1978	900	30	3000	2007	EG, OL	83	2021	NONE								2013	
7	Dawn Ln	12/2/1.5	1993	620	30	2066	2007	OL,BR FIALA	84	2021	NONE								2013	
8	Ripple Ridge Dr CDS	12/2/1.5	1994	300	30	1000	2004	OL,BR FIALA	79	2019	NONE									
9	Spring Ct	12/2/1.5	1995	300	30	1000	2004	OL,BR FIALA	79	2019	NONE									
	TOTAL			8,184.00								0.00	0.00	0.00	0.00	0.00	0.00	2,000.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXXVIII	Darien Woods																			
1	Darien Woods Ct	10/1.5/1.5	1997	440	30	1467	2002	New Const	71	2016	NONE								2010	
2	Kearney Rd	10/1.5/1.5	1997	600	21	1400	1998	New Const	70	2016	NONE									
	TOTAL			1,040.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2014*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXXIX	Waterfall Glen																			
1	Waterfall Glen Blvd	10/1.5/1.5	1997	2130	37	8757	2000	BUILDER	73	2017	NONE									
2	Waverly Ct	10/1.5/1.5	1997	330	29	1063	2000	BUILDER	78	2019	NONE									
3	Forest Glen Ct	10/1.5/1.5	1997	200	29	644	2000	BUILDER	78	2019	NONE									
4	Fountain Point Cir	10/1.5/1.5	1997	200	29	644	2000	BUILDER	80	2020	NONE									
	TOTAL			2,860.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

SUMMARY SHEET

PAGE NO.	SUBDIVSION	TOTAL CITY ROAD LENGTHS LINEAL FEET	PROPOSED LANE MILES	PROPOSED BASE REPAIR SQUARE YARDS	PROPOSED SURFACE ASPHALT OVERLAY TONS	PROPOSED FABRIC MATERIAL SQUARE YARDS	PROPOSED MiIIING-GRINDING SQUARE YARDS	PROPOSED LEVELING BINDER ASPHALT	PROPOSED CRACK FILL LINEAL FEET
A-1	Marion Hills North	22,570.00	-	0.00	0.00	0.00	0.00	0.00	3,900.00
A2	Marion Hills South	13,900.00	980.00	50.00	176.40	1,960.00	1,960.00	88.20	500.00
A3	Clarefield	13,045.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A4	Farmingdale Heights	3,416.00	-	0.00	0.00	0.00	0.00	0.00	2,000.00
A5	Woodlands	3,171.00	-	0.00	0.00	0.00	0.00	0.00	4,000.00
A6	North of 67th Street	5,202.00	-	0.00	0.00	0.00	0.00	0.00	600.00
A7	Hinsbrook	49,472.00	-	0.00	0.00	0.00	0.00	0.00	7,500.00
A8	Plainfield Highlands	7,590.00	-	0.00	0.00	0.00	0.00	0.00	2,500.00
A9	Farmingdale Terrace North	9,705.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A10	Farmingdale Terrace South	10,685.00	4,540.00	200.00	1,271.20	14,124.44	14,124.44	635.60	2,000.00
A11	Farmingdale Terrace West	4,680.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A12	Brookhaven 1	15,850.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A13	Darien Club	12,640.00	-	0.00	0.00	0.00	0.00	0.00	6,500.00
A14	Farmingdale 5-9	27,297.00	200.00	50.00	56.00	622.22	622.22	28.00	4,500.00
A15	Downers Fairview	6,980.00	1,460.00	100.00	394.20	4,380.00	4,380.00	197.10	500.00
A16	Brookhaven 2	15,850.00	1,570.00	150.00	422.55	4,695.00	4,695.00	211.28	1,800.00
A17	Knottingham	2,733.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A18	Farmingdale Ridge	24,980.00	5,250.00	400.00	1,083.00	12,033.33	12,033.33	541.50	4,000.00
A19	Woodmere	4,841.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A20	Farmingdale Village	24,980.00	1,700.00	100.00	469.00	5,211.11	5,211.11	234.50	8,000.00
A21	Carriage Hill	7,924.00	5,625.00	400.00	1,260.00	14,000.00	14,000.00	630.00	0.00
A22	Tera Hill	7,780.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A23	Carriage Green 4	7,310.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A24	Brookeridge	4,630.00	-	0.00	0.00	0.00	0.00	0.00	500.00
A25	Carriage Green 1 &2	9,050.00	-	0.00	0.00	0.00	0.00	0.00	500.00
A26	Carriage Green 3	5,728.00	-	0.00	0.00	0.00	0.00	0.00	2,000.00
A27	Pinehurst	2,983.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A8	Sawmill	2,660.00	-	0.00	0.00	0.00	0.00	0.00	5,000.00
A29	Devonshire	2,325.00	1,800.00	100.00	540.00	6,000.00	6,000.00	270.00	0.00
A30	Bailey Park	12,250.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A31	Marco Estattes Smart Oaks	4,085.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A32	Farmingdale South	6,100.00	-	0.00	0.00	0.00	0.00	0.00	500.00
A33	Pine Parkway	5,340.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A34	Hidden Lake	8,184.00	-	0.00	0.00	0.00	0.00	0.00	2,000.00
A35	Darien Wood	1,040.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A36	Waterfall Glenn	2,860.00	-	0.00	0.00	0.00	0.00	0.00	0.00
	TOTALS	**369,836.00**	**23,125.00**	**1,550.00**	**5,672.35**	**63,026.11**	**63,026.11**	**2,836.18**	**58,800.00**
	MILES	**70.04**	**4.38**						

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

COST SUMMARY BREAKDOWN

PROPOSED LINEAL FEET/LANE MILES		PROPOSED BASE REPAIR SQUARE YARDS	PROPOSED SURFACE ASPHALT OVERLAY TONS	PROPOSED FABRIC MATERIAL SQUARE YARDS	PROPOSED MiIIING-GRINDING SQUARE YARDS	PROPOSED LEVELING BINDER ASPHALT	PROPOSED CRACK FILL LINEAL FEET
LINEAL FEET	**23,125.00**	**1,550.00**	**5,672.35**	**63,026.11**	**63,026.11**	**2,836.18**	**58,800.00**
MILES	**4.38**						

DESCRIPTION		UNIT	UNIT COST	QUANTITY	TOTAL COST
BITUMINOUS MATERIALS (PRIME COAT)		GAL	$1.65	630.26	$1,039.93
AGGREGATE (PRIME COAT)		TON	$16.50	126.05	$2,079.86
AREA REFLECTIVE CRACK CONTROL TREATMENT		SY	$1.10	63,026.11	$69,328.72
BITUMINOUS SURFACE REMOVAL (COLD MILLING) 2.25"		SY	$2.95	63,026.11	$185,927.03
1.5" BITUMINOUS CONCRETE SURFACE COURSE, MIX C, N50 (QC/QA)		TON	$71.65	5,672.35	$406,423.88
3/4" LEVELING BINDER (MACHINE METHOD), SUPERPAVE, IL-4.75, N50 (QC/QA)		TON	$77.20	2,836.18	$218,952.71
CLASS D PATCHES, SPECIAL, 6"		SY	$44.10	1,550.00	$68,355.00
STRUCTURES TO BE ADJUSTED		EACH	$500.00	20.00	$10,000.00
SUBTOTAL					$962,107.13
CONTINGENCY (10%)					$ 96,210.71
SUBTOTAL					$1,058,317.84
DESIGN ENGINEERING (5%)					$52,915.89
CORING TESTING SERVICES		LUMP SUM			$15,000.00
				TOTAL =	$1,126,233.74

PROGRAM DESCRIPTION		UNIT	UNIT COST	QUANTITY	TOTAL COST
Crack Seal Program		L.F.	1.38	58,800.00	$81,144.00
CONTINGENCIES		L.F.		5,880.00	$8,114.40
TOTAL CRACK SEAL PROGRAM		L.F.		64,680.00	$89,258.40
TOTAL CRACK SEAL PROGRAM		MILES	7286.4	12.25	$89,258.40

DESCRIPTION-PAVING PROGRAM-BREAKDOWN

COST PER MILE FOR REPAVING		$ 257,146.56
COST PER LINEAL FOOT		$ 48.70
COST PER SQUARE YARD		$ 17.87

DESCRIPTION-CRACK SEAL PROGRAM-BREAKDOWN

COST PER MILE FOR CRACK SEALING		$ 7,286.40
COST PER LINEAL FOOT		$ 1.38

CITY OF DARIEN ROAD MAINTENANCE PLAN
2014
PROPOSED

ENTER CATALOGUE YEAR IN CELL B1	2014
66	2014
67	2014
68	2015
69	2015
70	2016
71	2016
72	2016
73	2017
74	2017
75	2018
76	2018
77	2019
78	2019
79	2020
80	2020
81	2020
82	2021
83	2021
84	2021
85	2022
86	2022
87	2022
88	2023
89	2024
90	2025

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
I	**Marion Hills North**																			
1	Dale Road	NA/2/1.5	1940	860	18	1720	2003	EG, FM, LB, OL	75	2019	None								2014	2017
2	Iris Road	NA/2/1.5	1940	1240	18	2480	1999	EG, FM, LB, OL	67	2015	BR,FM,LB.OL	1240	50.0	223.2	2480	2480	111.6			
3	68th Street	NA/2/1.5	1940	2100	18	4200	2000	EG, FM, LB, OL	70	2015	BR,FM,LB.OL	2200	50.0	378	4200	4200	189			
4	69th Street	NA/2/1.5	1940	2300	18	4600	2001	EG, FM, LB, OL	72	2017	None								2006	
5	Peony Place	NA/2/1.5	1940	660	18	1320	2002	EG, FM, LB, OL	74	2018	None								2013	2016
6	Holly Avenue	NA/2/1.5	1940	1660	18	3320	2002	EG, FM, LB, OL	67	2015	BR,FM,LB.OL	1660	50.0	298.8	3320	3320	149.4			
7	Roger Road	NA/2/1.5	1940	1120	18	2240	2013	EG,LB, OL	90	2026	None									
8	Brookbank Avenue	NA/2/1.5	1940	1150	18	2300	2013	EG,LB, OL	90	2026	None									
9	High Road	NA/2/1.5	1940	2950	18	5900	2012	EG,LB, OL	88	2025	CF							3000		2015
10	Eleanor Place	NA/2/1.5	1940	1050	18	2100	2013	EG,LB, OL	90	2026	None									
11	Crest Road	6/1/1.5	1940	2200	20	4889	2008	TG,BR,FM,LB,OL	86	2023	None								2014	
12	Clarendon Hills Rd (67th-71st)	NA/3/2	1940	2640	22	6453	2001	EG, FM, LB, OL	74	2018	None								2007	
13	Clarendon Hills Rd (71st-75th)	NA/3/2	1940	2640	36	10560	2001	EG, FM, LB, OL	73	2018	None								2007	
	TOTAL			22,570.00								5,100.00	150.00	900.00	10,000.00	10,000.00	450.00	3,000.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
II	**Marion Hills South**																			
1	Janet Avenue	NA/2/1.5	1940	2800	18	5600	2006	TG,OL,FM	82	2022	None							800	2012	2015
2	74th Place	5/1.5/1.5	1940	1000	18	2000	2009	TG,BR,FM,LB,OL	86	2023	CF									
3	Brookbank Road	4/2/1.5	1940	600	19	1267	2010	TG,BR,FM,LB,OL	86	2023	None								2013	
4	Evans Place	NA/2/1.5	1940	660	18	1320	2011	TG,BR,FM,LB,OL	87	2023	None								2014	
5	Poplar Lane	NA/2/1.5	1940	840	18	1680	2012	EG,OL	88	2025	CF							300		2015
6	Eleanor Place (Elm-Janet)	3.2/2.5/1.5	1940	980	18	1960	2010	TG,BR,FM,LB,OL	86	2023	None								2013	
7	Eleanor Place (Janet-Plnfld)	NA/2/1.5	1940	700	18	1400	2004	EG,OL,FM	76	2019	None									
8	Eleanor Place (74th-Elm)	7/2/1.5	1940	440	18	880	2009	TG,BR,FM,LB,OL	85	2023	CF							400	2012	2015
9	Sunrise Avenue	NA/2/1.5	1940	980	18	1960	2007	OL,FM	79	2021	None								2013	
10	Capital Drive	NA/2/1.5	1940	980	18	1960	2014	EG,OL,FM	90	2026	None								2007	
11	Crest Road	NA/2/1.5	1940	920	18	1840	2004	EG,OL	76	2019	None									
12	High Road	NA/2/1.5	1940	440	18	880	2012	TG,BR,FM,LB,OL	88	2025	CF							500		2015
13	Elm Street (CH-Evans)	NA/2/1.5	1940	760	20	1689	2004	EG,OL,FM	72	2017	None								2014	
14	Elm Street (Evans-Rt 83)	NA/2/1.5	1940	1800	18	3600	2004	EG,OL,FM	72	2017	None								2014	
	TOTAL			13,900.00								0.00	0.00	0.00	0.00	0.00	0.00	2,000.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
III	**Clarefield**																			
1	Alabama Avenue	NA/2/1.5	1940	1093	18	2186	2000	EG,OL,FM	69	2015	TG,BR,FM,LB,OL	1093	50.0	197	2186	2186	98.37			
2A	Tennessee Ave	NA/2/1.5	1940	1093	18	2186	2000	EG,BR,FM,LB,OL	73	2018	None									
3	Bentley Ave	NA/2/1.5	1940	1093	18	2186	2000	EG,OL,FM	75	2019	None									
4	Western Ave	6/2/1.5	1940	1093	19	2307	2010	TG,BR,OL,EG,FM	87	2023	None								2012	
5	Leonard Drive	8/4/1.5	1940	1093	19	2307	2010	TG,BR,OL,EG,FM	87	2023	None								2013	
6	Chestnut Ln (Rich-Alabama)	NA/2/1.5	1940	2300	18	4600	2000	EG,OL,FM	69	2015	TG,BR,FM,LB,OL	2300	75.0	414	4600	4600	207			
7	67th Street	NA/2/1.5	1940	5280	20	11733	2007	TG,BR,OL,EG,FM	76	2019	None								2013	
	TOTAL			13,045.00								3,393.00	125.00	610.74	6,786.00	6,786.00	305.37	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
IV	**Farmingdale Heights**																			
1	Trenton Lane	8/1/1.5	1976	530	30	1767	2009	TG,BR,FM,LB,OL	85	2023	CF							600	2012	2015
2	Albany Lane	8/1/1.5	1976	350	30	1167	2009	TG,BR,FM,LB,OL	85	2023	CF							700	2012	2015
3	Columbia Lane	8/1.7/1.5	1976	650	30	2167	2010	TG,OL,LB	86	2023	None									
4	Charleston Drive	8/1.5/1.5	1976	1210	30	4033	2007	BR,OL,EG,FM,TG	83	2022	None								2013	
5	Chestnut Ln (Rich-Charls)	8/1/1.5	1976	676	30	2253	2008	TG,BR,FM,LB,OL	83	2022	None								2014	
	TOTAL			3,416.00								0.00	0.00	0.00	0.00	0.00	0.00	1,300.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
V	**Woodlands of Darien**																			
1	Tall Pines Dr (Cass-East N)	9/1.5/1.5	1986	435	25	1208	2008	TG,BR,FM,LB,OL	84	2022	CF								2014	
2	Tall Pines Dr (Cass-East S)	9/1.5/1.5	1986	435	15	725	2008	TG,BR,FM,LB,OL	84	2022	CF								2014	
3	Tall Pines Dr (East)	9/1.5/1.5	1986	1521	30	5070	2008	TG,BR,FM,LB,OL	84	2022	CF								2014	
4	Bavarian Ln	9/1.5/1.5	1986	780	30	2600	2008	TG,BR,FM,LB,OL	83	2022	CF								2014	
	TOTAL			3,171								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

Number	Location	Composition Aggr./Bind./Surf. (inches)	Year Const.	Pvmnt. Length (feet)	Pvmnt. Width (feet)	Square Yards	Most Recent Rehab.	Description of Work	Cond. Rating	Proposed Rehabilitation *YEAR*	Recommended Rehabilitation *2015*	PROPOSED LINEAL FEET	OL (tons)	FM (sq. yds)	Mill (sq. yds)	LB (tons)	Crackfill PROPOSED (LF)	Crackfill Year COMPLETED	Crackfill Year PROPOSED
VI	North of 67th St																		
1	Tennessee Ave	NA/1.5/1.5	1940	760	27	2280	2007	EG,OL,FM,BR,LB	83	2020	None							2013	
2	Easy St	11/1.5/1.5	1986	222	28	691	2007	TG,OLFM,LB	83	2020	None							2013	
3	High Ridge Ct	9/1.5/1.5	1995	600	27	1800	2011	New Cons.	87	2023	None							2014	
4	Windmere Ct	8/2/1.5	1996	570	27	1710	2000	New Cons.	70	2015	TG,BR,FM,LB,OL	570	154	1710	1710	76.95			
5	Sean Circle	8/2/1.5	2002	850	30	2833	2003	New Cons.	67	2015	TG,BR,FM,LB,OL	900.0	255	2833	2833	127.5		2011	
6	Bentley Ave	NA/1.5/1.5	1940	650	17	1228	2003	EG,OL,FM,LB	70	2017	None							2011	
7	Ridge Rd	8/2/1.5	2002	650	20	1444	2002	EG,OL,FM,LB	73	2018	None							2013	
8	Western Ave	NA/1.5/1.5	1940	500	27	1500	2004	EG,OL,FM,LB	72	2017	None								
9	Richmond Ave	NA/1.5/1.5	1940	400	19	844	2011	TG,OL,FM,LB	87	2023	None								
	TOTAL			5,202								1,470.00	408.90	4,543.33	4,543.33	204.45	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
VII	Hinsbrook																			
1	69th Street	8/2/4	1966	5280	28	16427	2011	EG,BR,OL,LB	87	2023	None								2014	2017
2	70th Street	8/2/4	1967	2760	28	8587	2011	EG,OL,LB	87	2023	None								2014	2017
3	Richmond Ave (69th-67th)	8/2/4	1967	1500	37	6167	2006	EG,OL,LB,FM	78	2020	None								2012	2015
4	Richmond Ave (69th-72nd)	8/2/4	1966	1680	37	6907	2006	EG,OL,LB,FM	78	2020	None								2012	2015
5	Richmond Ave (72nd-Seminole	8/2/4	1966	1960	28	6098	2003	EG,OL,LB,FM	78	2020	None								2014	2017
6	Maple Ln	8/2/4	1967	2840	28	8836	2012	TG,LB,FM,OL	88	2025	CF							600		2015
7	71st Street	8/2/4	1966	5280	37	21707	2002	EG,OL,LB,FM	72	2017	None								2013	2016
8	Sierra Drive	8/1/1.5	1966	1350	28	4200	2008	TG,BR,FM,LB,OL	85	2023	None								2014	2017
9	Sierra Court	8/1/1.5	1966	300	40	1333	2008	TG,BR,FM,LB,OL	85	2023	None								2014	2017
10	Ironwood Ave (Seminole-69th)	8/2/4	1966	1025	28	3189	2006	EG,OL,LB,FM	76	2019	None								2012	2015
11	Ironwood Ave (Beechnut-Semir	8/2/4	1966	1075	28	3344	2006	EG,OL,LB,FM	70	2017	None								2012	2015
12	Wilmette Ave (69th-67th)	8/2/4	1966	1442	30	4807	2004	EG,OL,LB,FM	75	2019	None									
13	Wilmette Ave (69th-Hinsbrk)	8/2/4	1966	660	28	2053	2004	EG,OL,LB,FM	75	2019	None									
14	Hinsbrook Avenue	8/2/4	1966	1450	37	5961	2006	TG,OL,FM,LB	82	2022	None									
15	Beechnut Lane	8/2/4	1966	1750	28	5444	2006	TG,OL,FM,LB	81	2021	None									
16	Seminole Drive	8/2/4	1966	3200	37	13156	2005	EG,OL,BR,FM,LB	73	2018	None									
17	Seminole Drive (CDS)	8/2/4	1966	240	40	1067	2009	TG,OL,FM,LB	86	2023	CF							200	2012	2015
18	Tamarack Drive	8/2/4	1966	2200	28	6844	2012	EG,OL,LB	88	2025	CF							400		2015
19	Belair Drive	8/2/4	1966	2200	28	6844	2009	TG,B,OL	85	2023	CF							1000	2012	2015
20	Belair Dr (CDS)	8/2/4	1966	160	50	889	2009	TG,FM,OL,LB	85	2023	CF							500	2012	2015
21	Willow Lane	8/2/4	1966	900	28	2800	2003	EG,OL,LB,FM	78	2020	None								2014	2017
22	Bunker Road	8/2.5/1.5	1966	1000	27	3000	2008	TG,BR,FM,LB,OL	86	2023	None									
23	Timber Ln (Cass--Darien Ln)	8/2/4	1966	920	28	2862	2004	EG,OL,LB,FM	74	2018	None									
24	Timber Ln (Darien Ln-Richmon	8/2/4	1966	1760	28	5476	2007	EG,OL,LB,FM	83	2022	None								2013	2016
25	Bentley Ave (69th-71st)	8/2/4	1967	1360	28	4231	2001	EG,OL,LB,FM	67	2015	TG,BR,FM,LB,OL	1360	50.0	380.8	4231	4231	190.4		2006	2009
26	Cherokee Dr	8/2/4	1966	1300	28	4044	2000	EG,OL,LB,FM	71	2017	None									
27	Village Court	8/2/4	1966	500	28	1556	2009	TG,B,OL	86	2023	CF							100	2012	2015
28	Darien Lane	8/2/4	1966	1060	28	3298	2011	TG,LB,FM,OL	87	2023	None								2014	2017
29	Hickory Lane	8/2/4	1966	1080	28	3360	2007	EG,OL,LB,FM	83	2022	None								2013	2016
30	70th Street (CDS #1)	8/2/4	1967	180	50	1000	2011	EG,OL,LB	87	2023	None								2014	2017
31	70th Street (CDS #2)	8/2/4	1967	180	50	1000	2011	EG,OL,LB	87	2023	None								2014	2017
32	70th Street (CDS #3)	8/2/4	1967	180	50	1000	2011	EG,OL,LB	87	2023	None								2014	2017
33	Maple Lane (CDS #1)	8/2/4	1967	180	50	1000	2012	TG,LB,FM,OL	88	2025	CF							200		2015
34	Maple Lane (CDS #2)	8/2/4	1967	180	50	1000	2012	TG,LB,FM,OL	88	2025	CF							300		2015
35	James Peter Ct	8/2/	2006	340	31	1171	2010	BR,OL	86	2023	None								2013	2016
	TOTAL			49,472.00								1,360.00	50.00	380.80	4,231.11	4,231.11	190.40	3,300.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
VIII	Plainfield Highlands																			
1	72nd Street	NA/1.5/1.5	1940	2000	18	4000	2005	EG,BR,OL,FM,LB	75	2019	None									
2	Bentley Ave (71st-72nd)	NA/1.5/1.5	1940	480	20	1067	2012	TG,BR,FM,LB,OL	88	2025	CF							500		2015
3	Bentley Ave (72nd-73rd)	NA/1.5/1.5	1940	600	20	1333	2008	TG,BR,FM,LB,OL	83	2022	None								2014	
4	73rd Street	NA/1.5/1.5	1940	450	20	1000	2008	TG,BR,FM,LB,OL	84	2022	None								2014	
5	Tennessee Avenue	NA/1.5/1.5	1940	980	18	1960	2007	EG, OL,LB,FM	81	2021	None								2014	
6	Western Avenue	NA/1.5/1.5	1940	1420	18	2840	2011	TG,FM,OL,LB	87	2023	None									
7	Leonard Drive	8/1.5/1.5	1940	1660	18	3320	2009	TG,FM,OL,LB	86	2023	CF							600	2012	2015
	TOTAL			7,590.00								0.00	0.00	0.00	0.00	0.00	0.00	1,100.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
IX	Farmingdale Terrace North																			
1	Farmingdale Dr (S-Walnut)	8/2/1.5	1971	600	24	1600	2006	EG,OL,LB,FM	78	2020	None								2013	
2	Farmingdale Dr (Walnut-N)	8/2/1.5	1971	600	24	1600	2006	EG,OL,LB,FM	81	2020	None								2013	
3	Farmingdale Dr (Walnut-79th)	8/2/1.5	1971	1900	28	5911	2006	EG,OL,LB,FM	78	2020	None								2013	
4	Chippewa Lane	8/2/1.5	1971	400	28	1244	2007	TG, OL,LB,FM	82	2022	None								2013	
5	Sawyer Rd (Chippewa-Honey)	8/2/1.5	1971	1400	28	4356	2004	EG,OL,LB,FM	72	2017	None									
6	Pine Tree Ln	8/2/1.5	1971	160	28	498	2004	EG,OL,LB,FM	82	2022	None									
7	Honey Locust Ln	8/2.5/1.5	1971	480	28	1493	2009	TG,B,OL	85	2023	CF							400	2012	2015
8	Dorchester Ln	8/2/1.5	1994	615	28	1913	2013	EG,OL,LB	90	2026	None									
9	Somerset Ln	8/2/1.5	1994	335	28	1042	2013	EG,OL,LB	90	2026	None									
10	Mayfair Ln	8/2/1.5	1994	615	28	1913	2013	EG,OL,LB	90	2026	None									
11	Nantucket Drive	12/2/1.5	1971	2600	37	10689	2010	TG, OL,LB,FM	86	2023	None								2013	
	TOTAL			9,705.00								0.00	0.00	0.00	0.00	0.00	0.00	400.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
X	**Farmingdale Terrace South**																			
1	Sawyer Rd (79th-Portsmth)	8/2/1.5	1971	2700	28	8400	2014	TG,BR,FM,LB,OL	90	2026	NONE									
2	Sawyer Court	8/1/1.5	1971	200	28	622	2008	TG,BR,FM,LB,OL	84	2022	NONE								2014	
3	Glen Lane	8/2/1.5	1971	1150	28	3578	2007	TG,OL,LB,FM	83	2022	NONE								2013	
4	Portsmouth Drive	8/2/1.5	1971	2100	28	6533	2003	EG,BR,OL,LB,FM	73	2018	NONE								2011	
5	Arrow Lane	8/2/1.5	1971	600	28	1867	2012	TG,BR,FM,LB,OL	88	2025	CF							1000		2015
6	Woodland Drive	8/2/1.5	1981	700	30	2333	2000	EG,OL,LB	71	2017	NONE									
7	Farmingdale Dr (Glen-Portsmo	8/2/1.5	1971	1840	28	5724	2014	TG,BR,FM,LB,OL	90	2026	NONE								2013	
8	Wittington Ct	8/1/1.5	1993	345	28	1073	2008	TG,BR,FM,LB,OL	84	2022	NONE								2014	
XI	**High Point Circle**																			
1	High Point Circle	8/2/1.5	1988	1050	30	3500	2003	EG,OL,LB,FM	74	2018	NONE								2012	
	TOTAL			10,685.00								0.00	0.00	0.00	0.00	0.00	0.00	1,000.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XII	Farmingdale Terrace West																			
1	Comstock Lane	8/2/1.5	1971	900	28	2800	2012	EG,OL,LB	88	2025	CF							500		2015
2	Walnut Dr (942-Farmingdale)	8/2/1.5	1971	1100	28	3422	2006	EG,OL,LB,FM	79	2021	none								2012	2015
3	Hayenga Lane	8/2/1.5	1971	980	28	3049	2012	EG,OL,LB	88	2025	CF							300		2015
4	Andermann Lane	8/2/1.5	1971	660	28	2053	2012	EG,OL,LB	88	2025	CF							300		2015
5	Baker Court	8/2/1.5	1971	640	28	1991	2012	EG,OL,LB	88	2025	CF							400		2015
6	Del Court	8/2/1.5	1971	400	28	1244	2012	TG,OL,LB,FM	88	2025	CF							500		2015
	TOTAL			4,680.00								0.00	0.00	0.00	0.00	0.00	0.00	2,000.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
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PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XIII	Brookhaven #1																			
1	Stratford Place	12/1..5/1.5	1971	1800	28	5600	2010	TG,BR,FM,LB,OL	86	2022	None								2013	
2	Juniper Ln (Warwick-E)	10/2.5/1.5	1940	300	18	600	2009	TG,B,OL,PGE	85	2023	CF								2012	
3	Juniper Ln (Stratford-W)	12/2.5/1.5	1940	180	28	560	2009	TG,B,OL	85	2023	CF								2012	
4	Walnut Dr (Warwick-942)	NA/1.5/1.5	1940	200	18	400	2006	EG,OL,LB,FM	81	2021	None									
5	Brookhaven Avenue	NA/1.5/1.5	1940	1320	18	2640	2005	EG,OL,LB,FM	72	2017	None									
6	Janet Ave (Warwick-E)	NA/1/1.5	1940	560	20	1244	2009	TG,OL,LB,FM	85	2023	CF								2012	
7	Janet Ave (Gail-Warwick)	NA/2.5/1.5	1940	420	20	933	2009	TG,OL,B,BR	85	2023	CF							500	2012	2015
8	Linden Avenue	10/0/1.5	1940	1420	18	2840	2010	TG,BR,FM,LB,OL	86	2023	None									
9	Gail Avenue	NA/1.5/1.5	1940	1240	18	2480	2005	EG,OL,LB,FM	70	2017	None									
10	79th St (Cass-Sawyer)	NA/1.5/1.5	1940	4160	37	17102	2002	EG,OL,LB,FM,BR	74	2018	None								2012	
11	Country Lane	8/1/1.5	1968	1200	28	3733	2007	TG,OL,LB,FM	85	2023	None								2013	2016
12	Warwick Dr	5/2/1.5	1940	1900	20	4222	2009	TG,OL,LB,BR,FM	86	2023	CF							700	2012	2015
13	Concord Dr (Cass -Chalet)	8/2.5/1.5	1968	250	48	1333	2009	TG,B,OL	85	2023	CF							500	2012	2015
14	Concord Dr (Chalet-Limit)	8/2.5/1.5	1968	300	28	933	2009	TG,B,OL	85	2023	CF							500	2012	2015
15	Chalet Dr	8/2.5/1.5	1968	600	30	2000	2009	TG,FM,LB,OL	85	2023	CF							500	2012	2015
	TOTAL			15,850.00								0.00	0.00	0.00	0.00	0.00	0.00	2,700.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XIV	Darien Club																			
1	Darien Club Drive	9/1.5/1.5	1989	5920	27	17760	2008	TG,BR,FM,LB,OL	84	2022	None								2014	
2	Clare Court	9/1.5/1.5	1992	360	28	1120	2012	TG,BR,FM,LB,OL	88	2025	CF							300		2015
3	Bantry Ct	9/1.5/1.5	1992	200	27	600	2012	TG,BR,FM,LB,OL	88	2025	CF							300		2015
4	Galway Ct	9/1.5/1.5	1989	480	28	1493	2011	TG,BR,FM,LB,OL	87	2023	None								2014	
5	Limerick Ct	9/1.5/1.5	1989	600	28	1867	2011	TG,BR,FM,LB,OL	87	2023	None									
6	Clover Ct	9/1.5/1.5	1989	350	28	1089	2012	NEW CONS	88	2025	CF							400		2015
7	Irish Ct	9/1.5/1.5	1989	350	28	1089	2012	NEW CONS	88	2025	CF							400		2015
8	Sweetbriar Ln	9/2.5/1.5	1989	2000	30	6667	2008	TG,BR,FM,LB,OL	85	2023	None									
9	Discosola Ct	9/1.5/1.5	2004	350	27	1050	2004	NEW CONS	75	2019	None								2014	
10	Kelly Ct	9/1.5/1.5	1994	650	28	2022	2011	TG,BR,FM,LB,OL	86	2023	None								2014	
11	Allison Ln	9/1.5/1.5	1989	335	30	1117	2012	NEW CONS	88	2025	CF									
12	Exner Rd (DC-Holly)	9/1.5/1.5	1992	465	37	1912	2006	EG,OL,	81	2021	None							1000	2012	2015
13	Hudson St	8/1.5/1.5	1970	580	28	1804	2000	EG,OL,	76	2019	None									
	TOTAL			12,640.00								0.00	0.00	0.00	0.00	0.00	0.00	2,400.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XV	Farmingdale Unit 5, 6, 7, 8, 9																			
1	71st St (Washington-1722)	8/1.5/1.5	1975	2500	37	10278	2005	EG,OL,LB,FM,BR	73	2018	NONE								2012	
2	71st St (1722-West)	8/1.5/1.5	1975	1340	27	4020	2005	EG,OL,LB,FM,BR	74	2018	NONE								2012	
3	Wilcox Avenue	8/1.5/1.5	1972	625	28	1944	2013	TG,OL,LB	90	2026	NONE									
4	Holly Av	8/1.5/1.5	1968	3300	28	10267	2006	EG,OL,LB,FM	78	2020	NONE								2012	
5	McAdam Rd	8/1.5/1.5	1972	980	28	3049	2013	EG,OL,LB	90	2026	NONE									
6	Exner Rd (Holly-71st)	8/1.5/1.5	1972	850	37	3494	2006	EG,OL,LB,FM	81	2021	NONE								2012	
7	Exner Rd (71st-75th)	8/1.5/1.5	1975	3000	37	12333	2006	EG,OL,LB,FM	81	2021	NONE								2012	
8	Claremont Dr	8/1.5/1.5	1968	1232	28	3833	2007	EG,OL,LB	84	2022	NONE								2013	
9	Emerson Dr	8/2.5/1.5	1972	1460	28	4542	2009	TG,B,OL	85	2023	CF								2012	
10	Whittier Dr	8/1/1.5	1972	660	28	2053	2009	TG,OL,LB	85	2023	CF								2012	
11	73rd St	8/1.5/1.5	1972	1830	28	5693	2002	EG,OL,LB,FM	71	2017	NONE								2013	
12	Park Ave	8/1.5/1.5	1972	1200	28	3733	2005	EG,OL,LB,FM	76	2019	NONE									
13	Shelley Ct	8/1.5/1.5	1972	450	28	1400	2005	EG,OL,LB,FM	77	2020	NONE									
14	Carrol Ct	8/1.5/1.5	1972	450	28	1400	2005	EG,OL,LB,FM	78	2020	NONE									
15	Adams	8/1.5/1.5	1967	600	28	1867	2007	EG,OL,LB,FM	84	2022	NONE								2013	
16	Exner Ct	8/1.5/1.5	1975	160	28	498	2012	TG,OL,LB,FM	88	2025	CF							100		2015
17	Arbor Ct	8/1.5/1.5	1975	340	28	1058	2007	EG,OL,LB,FM	83	2022	NONE								2013	
18	Bayberry Ln	8/1.5/1.5	1975	1160	30	3867	2008	EG,OL,LB	85	2023	NONE								2014	
19	Clemens Rd	8/1.5/1.5	1975	1120	28	3484	2007	EG,OL,LB,FM	83	2022	NONE								2013	
20	Carrol Ln	8/1.5/1.5	1972	200	28	622	2014	TG,OL,LB,FM	90	2026	NONE									
21	Summit Rd	8/1.5/1.5	1975	2240	28	6969	2006	EG,OL,LB,FM	81	2021	NONE								2012	
22	Walden Ln	8/2.5/1.5	1975	1320	30	4400	2008	TG,B,OL	85	2023	NONE								2014	
23	Williams St (Holly-Claremont)	8/1.5/1.5	1968	280	28	871	2010	TG,OL,LB,FM	86	2023	NONE								2013	
	TOTAL			27,297								0.00	0.00	0.00	0.00	0.00	0.00	100.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XVI	Downers Fairview																			
1	Wirth Ln	8/1.5/1.5	1968	1460	27	4380	2014	TG,BR,FM,OL,LB	90	2026	NONE									
2	Gigi Ln	8/1.5/1.5	1968	2300	36	9200	2001	EG,OL,LB,FM	67	2015	TG,BR,LB,OL	600	100	828	9200	9200	414		2006	
3	Richard Rd	8/1.5/1.5	1968	720	27	2160	2014	TG,BR,FM,OL,LB	90	2026	NONE									
4	72nd St	8/1.5/1.5	1968	800	27	2400	2011	EG,OL,LB	87	2023	NONE								2014	
5	Gold Grove Dr	8/1.5/1.5	1968	1160	27	3480	2005	EG,OL,LB,FM	73	2018	NONE									
6	Howdy Ln	8/1.5/1.5	1968	540	27	1620	2014	TG,BR,FM,OL,LB	90	2026	NONE									
	TOTAL			6,980.00								600.00	100.00	828.00	9,200.00	9,200.00	414.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XVII	Brookhaven #2																			
1	Grant St	8/2.5/1.5	1950	1000	30	3333	2008	TG,BR,FM,LB,OL	84	2022	NONE								2014	
2	Adams St	8/1.5/1.5	1950	1300	28	4044	2002	EG,BR,OL,LB,FM	72	2017	NONE								2013	
3	77th St (Knott-Wlms)	8/1.5/1.5	1950	400	28	1244	2000	EG,OL,BL,FM	75	2019	NONE									
4	77th St (Wlms-Adams)	8/1.5/1.5	1950	1500	28	4667	2010	EG,OL,LB	86	2023	NONE								2013	
5	Sequoia Ln	8/1.5/1.5	1950	1500	28	4667	2004	EG,OL,LB,FM	73	2018	NONE								2012	
6	Hawthorne Pl	8/1.5/1.5	1974	330	28	1027	2005	EG,OL,LB,FM	80	2021	NONE									
7	Stevens St	8/1.5/1.5	1974	540	28	1680	2005	EG,OL,LB,FM	78	2020	NONE									
8	Williams St (1-77th-2-77th)	8/2/1.5	1966	350	37	1439	2004	EG,OL,LB,FM	78	2020	NONE								2012	
9	Williams St (7612)	8/2/1.5	1966	75	37	308	2004	EG,OL,LB,FM	78	2020	NONE								2012	
10	Williams (7520)	8/2/1.5	1966	75	20	167	2004	EG,OL,LB,FM	78	2020	NONE								2012	
11	Williams (1 Elizabeth)	8/2/1.5	1966	210	20	467	2004	EG,OL,LB,FM	78	2020	NONE								2012	
	Norman Court																			
7	Norman Drive	8/1.5/1.5	1989	1470	27	4410	2008	TG,BR,FM,LB,OL	84	2022	None								2014	
	Brittany Court	8/1.5/1.5	1989	530	27	1590	2014	TG,BR,LB,OL	90	2026	None									
	Coventry Court	8/1.5/1.5	1989	640	27	1920	2014	TG,BR,LB,OL	90	2026	None									
	Canterbury Court	8/1.5/1.5	1989	395	27	1185	2014	TG,BR,LB,OL	90	2026	None									
82-84	2023																			
85-87	2024																			
88-89	2025																			
90	2026																			
	TOTAL			10,315.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XVIII	Knottingham																			
1	Florence Ave	8/1.5/1.5	1956	1250	28	3889	2013	TG,BR,FM,LB,OL	89	2025	NONE									
2	Center Cir	8/1.5/1.5	1956	190	28	591	2013	TG,BR,FM,LB,OL	89	2025	NONE									
3	Gordon Ct	8/1.5/1.5	1956	190	28	591	2013	TG,BR,FM,LB,OL	89	2025	NONE									
4	Knottingham Ln (7709-77621)	8/1.5/1.5	1966	428	28	1332	2012	B,OL	88	2025	NONE									
5	Baimbridge Dr(7625-7621)	8/1.5/1.5	1966	166	28	516	2012	B,OL	88	2025	NONE									
6	Elizabeth Ln (One)	8/1.5/1.5	1966	100	28	311	2012	B,OL	88	2025	NONE									
7	Redondo Ct	10/2/2001	1994	409	27	1227	2013	TG,BR,FM,LB,OL	89	2025	NONE									
	TOTAL			2,733.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

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		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XVIV	Farm-Ridge																			
1	Manning Rd (Lyman-Brunswick)	10/2/1.5	1997	2500	32	8889	1997	Reconst&Widen	72	2017	NONE									
2	Manning Rd (Limit-Limit)	10/2/1.5	1997	2000	32	7111	1997	Reconst&Widen	72	2017	NONE									
3	Fairview Ave	10/1.5/1.5	1989	1400	37	5756	2003	EG,OL,LBFM	81	2021	NONE								2011	
4	Judd St	10/1/1.5	1989	475	30	1583	2009	TG,OL,LB,FM	84	2022	CF							500	2012	2015
5	Wilton Rd	10/1/1.5	1989	1050	30	3500	2009	TG,OL,LB,FM	84	2022	CF							600	2012	2015
6	Harper Rd	10/1/1.5	1989	450	30	1500	2009	TG,OL,LB,FM	83	2022	CF							1000	2012	2015
7	Exton St	10/1/1.5	1989	550	30	1833	2009	TG,OL,LB,FM	83	2022	CF							600	2012	2015
8	Green Valley Ct	9/2/1	1979	500	30	1667	2011	EG,OL,LB	87	2023	NONE								2014	
9	Brunswick Rd	9/2/1	1979	765	30	2550	2014	EG,OL,LB	90	2026	TG,BR,LB,OL									
10	Brompton Dr	9/2/1	1979	585	30	1950	2014	EG,OL,LB	90	2026	TG,BR,LB,OL									
11	Dartmouth Ln	9/2/1	1979	325	30	1083	2014	EG,OL,LB	90	2026	TG,BR,LB,OL									
12	Carlton Rd	9/2/1	1979	845	30	2817	2014	EG,OL,LB	90	2026	TG,BR,LB,OL									
13	Hamilton Ln	9/2/1	1979	360	30	1200	2004	EG,OL,LB,FM	73	2018	NONE									
14	Danbury Dr	9/2/1	1979	540	30	1800	2004	EG,OL,LB,FM	73	2018	NONE									
15	Barclay Rd	9/2/1	1979	870	30	2900	2005	EG,OL,LB,FM	81	2021	NONE									
16	Bedford Ln	9/2/1	1978	330	30	1100	2005	EG,OL,LB,FM	80	2021	NONE									
17	Surrey Dr	9/2/1	1978	700	30	2333	2003	EG,OL,LB,FM	80	2021	NONE								2014	
18	Lyman Av	9/2/1	1978	945	30	3150	2000	EG,OL,LB,FM	76	2019	NONE									
19	Wakefield Dr	9/2/1	1978	1460	30	4867	2011	TG,OL,LB,FM	87	2023	NONE									
20	Marlborough Ln	9/2/1	1978	995	30	3317	2005	EG,OL,LB,FM	81	2021	NONE									
21	Aylesbury Ln	9/2/1	1978	335	30	1117	2001	EG,OL,LB,FM	70	2015	TG,BR,LB,OL	400	50	101	1117	1117	50		2006	
22	Cambridge Rd	9/2/1	1978	1090	30	3633	1998	EG,OL,LB	67	2015	TG,BR,LB,OL	1090	50	327	3633	3633	164			
23	Abbey Dr	9/2/1	1978	640	30	2133	2001	EG,OL,LB,FM	77	2020	NONE								2006	
24	Main St	9/2/1	1978	1020	27	3060	2009	TG,OL,LB,FM	84	2022	CF							1000	2012	2015
25	Green Valley Rd	9/2/1	1979	2900	30	9667	2011	TG,OL,LB,FM	87	2023	NONE								2014	
26	Lyman Ave (75th-Manning)	12/2/1.5	1991	1350	37	5550	2010	TG,OL,LB,FM	86	2023	NONE								2013	
	TOTAL			24,980.00								1,490.00	100.00	427.50	4,750.00	4,750.00	213.75	3,700.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XX	Woodmere																			
1	Woodmere Dr	9/1.5/1.5	1996	1218	30	4060	2001	TG,OL,LB,FM	67	2015	NONE	1218	50	365	4060	4060	183		2006	
2	Curran Ct	9/1.5/1.5	1996	225	24	600	2001	NEW CONST	67	2015	NONE	225	51	54	600	600	27		2006	
3	Windsor Dr	9/1.5/1.5	1996	995	30	3317	2001	NEW CONST	67	2015	NONE	995	52	299	3317	3317	149		2006	
4	Morgan Ct	9/1.5/1.5	1996	200	29	644	2001	NEW CONST	67	2015	NONE	200	53	58	644	644	29		2006	
5	Windsor Ct	9/1.5/1.5	1996	107	99	1177	2001	NEW CONST	67	2015	NONE	100	54	106	1177	1177	53		2006	
6	Whitlock Dr	9/1.5/1.5	1996	680	30	2267	2001	NEW CONST	67	2015	NONE	680	55	204	2267	2267	102		2006	
7	Oxford Dr	9/1.5/1.5	1996	276	30	920	2001	NEW CONST	67	2015	NONE	920	56	83	920	920	41		2006	
8	Oxford Ct	9/1.5/1.5	1996	312	25	867	2001	TG,OL,LB,FM	67	2015	NONE	867	57	78	867	867	39		2006	
9	Cameron Ct	9/1.5/1.5	1996	212	30	707	2001	NEW CONST	67	2015	NONE	700	58	64	707	707	32		2006	
10	Hedgewood Dr	9/1.5/1.5	1996	616	30	2053	2001	NEW CONST	67	2015	NONE	2053	59	185	2053	2053	92		2006	
	TOTAL			4,841.00								7,958.00	545.00	1,495.03	16,611.44	16,611.44	747.52	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXI	Farmingdale Village																			
1	Parkview Dr	8/1.5/1.5	1973	1310	28	4076	2003	EG,OL,LB,FM	83	2022	NONE								2011	
2	Drover Ln	8/1.5/1.5	1973	3930	28	12227	2011	TG,BR,FM,LB,OL	89	2025	NONE									
3	Drover Ct	8/1.5/1.5	1973	330	28	1027	2007	EG,OL,LB,FM	81	2021	CF								2010	2013
4	Grandview Pl	8/1.5/1.5	1973	1500	28	4667	2003	EG,OL,LB,FM	82	2022	NONE									
5	Grandview Ln	8/1.5/1.5	1973	370	33	1357	2003	EG,OL,LB,FM	79	2021	NONE								2011	
6	Dixon Ct	8/1.5/1.5	1978	425	28	1322	2014	TG,BR,FM,LB,OL	90	2026	NONE									
7	Beller Dr	10/1.7/1.5	1973	4870	30	16233	2010	TG,BR,FM,LB,OL	86	2023	CF							6000		2013
8	Brewer Rd	8/1.5/1.5	1978	2150	28	6689	2011	TG,BR,FM,LB,OL	87	2023	NONE									
9	Cramer Ln	8/1.5/1.5	1978	480	28	1493	2012	TG,BR,FM,LB,OL	88	2025	NONE									
10	Alden Ln	8/1.5/1.5	1978	760	28	2364	2012	TG,BR,FM,LB,OL	88	2025	NONE									
11	Burgess Pl	8/1.5/1.5	1978	390	28	1213	2012	TG,BR,FM,LB,OL	88	2025	NONE									
12	Gilbert Ct	8/1.5/1.5	1978	330	28	1027	2000	EG,OL,LB,FM	69	2016	NONE									
13	Ailsworth Dr	11/1.7/1.5	1977	1420	28	4418	2010	TG,BR,FM,LB,OL	86	2023	NONE								2013	
14	Ailsworth Ct	11/1.7/1.5	1977	535	28	1664	2010	TG,BR,FM,LB,OL	84	2022	NONE								2013	
15	Pitcher Dr	8/1/1.5	1977	860	30	2867	2008	TG,BR,FM,LB,OL	84	2022	NONE									
16	Clifford Rd	8/1/1.5	1977	660	30	2200	2008	TG,BR,FM,LB,OL	84	2022	NONE									
17	Stewart Rd	8/1/1.5	1977	860	30	2867	2008	TG,BR,FM,LB,OL	84	2022	NONE									
18	Havens Dr	8/1/1.5	1977	360	28	1120	2004	EG,OL,LB,FM	75	2019	NONE									
19	Downers Dr	8/0/4	1997	150	23	383	2010	TG,BR,FM,LB,OL	86	2023	NONE								2013	
20	Woodvale Dr	8/1.5/1.5	1974	1270	28	3951	2013	EG,OL,LB	89	2025	NONE									
21	Beller Ct	8/1.5/1.5	1974	485	28	1509	2013	EG,OL,LB	89	2025	NONE									
22	Highcrest Dr	8/1.5/1.5	1974	765	28	2380	2013	EG,OL,LB	89	2025	NONE									
23	Hillside Ln (Meadow-Woodvale)	8/1.5/1.5	1974	1625	28	5056	2012	TG,BR,FM,LB,OL	87	2023	CF							800		2015
24	Hillside Ct	8/1.5/1.5	1974	180	28	560	2006	EG,OL,LB,FM	80	2021	NONE								2012	
25	Meadow Ln	8/1.5/1.5	1974	1250	28	3889	2014	TG,OL,LB	66	2015	NONE									
26	Harvest Pl	8/1.5/1.5	1974	1230	28	3827	2006	EG,OL,LB,FM	78	2020	NONE								2012	
27	Meadow Ct	8/3/1.5	1974	340	28	1058	2009	TG,B,OL	90	2026	CF							1000	2012	2015
28	Pearson Dr	10/2.5/1.5	1988	920	28	2862	2009	TG,B,OL	85	2023	CF							600	2012	2015
29	Water Tower Ln	10/2/1	1988	340	28	1058	2012	TG,BR,FM,LB,OL	88	2025	CF							300		2015
30	Sandalwood Dr	10/2/1	1988	600	28	1867	2012	TG,BR,FM,LB,OL	88	2025	CF							400		2015
31	Aster Ln	10/2.5/1.5	1988	340	28	1058	2009	TG,B,OL	85	2023	NONE								2012	
32	Sandalwood Ct	9/1.5/1.5	1992	600	28	1867	2011	TG,B,OL	87	2023	NONE									
33	Chicory Ct	9/2.5/1.5	1992	700	28	2178	2009	TG,B,OL	85	2023	CF								2012	2015
34	Spring Green Dr	8/2/1.5	1973	1165	28	3624	2003	EG,OL,LB,FM	78	2020	NONE							2000	2014	
35	83rd St (Lemont-Dunham)	8/2/1.5	1950	1000	28	3111	1996	EG,OL,LB	70	2017	Partal WoodRidge									
36	83rd St (Beller-Grandview)	8/2/1.5	1950	1000	28	3111	1996	EG,OL,LB	70	2017	Partal WoodRidge									
37	Hillside Ln (Pearson-Meadow)	8/2/1.5	1974	250	28	778	2009	TG,BR,FM,LB,OL	85	2023	CF							400	2012	2015
	TOTAL			35,750.00								0.00	0.00	0.00	0.00	0.00	0.00	11,500.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXII	Carriage Hill																			
1	Oldfield Rd (Frontage 1400')	8/1.5/1.5	1930	1400	20	3111	2014	TG,OL,LB,FM	90	2026	NONE									
2	Oldfield Rd (675')	8/1.5/1.5	1930	675	40	3000	2014	TG,OL,LB,FM	90	2026	NONE									
3	Oldfield Rd (800')	8/1.5/1.5	1930	800	20	1778	2014	TG,OL,LB,FM	90	2026	NONE									
4	Robert Rd (Oldfield-Donegal)	8/1.5/1.5	1989	720	30	2400	2012	TG,OL,LB,FM	88	2025	CF							400		2015
5	Shannon Ct	8/1.5/1.5	1989	325	30	1083	2012	TG,OL,LB,FM	88	2025	CF							500		2015
6	Donegal Dr	8/1.5/1.5	1989	1254	30	4180	2012	TG,OL,LB,FM	88	2025	CF							500		2015
7	87th St (Lemont-Washington)	8/1.5/1.5	1940	2250	20	5000	2014	TG,OL,LB,FM	90	2026	NONE									
8	Andrus Rd (Frontage to 66)	8/1.5/1.5	1940	200	20	444	2014	TG,OL,LB,FM	90	2026	NONE									
9	Andrus Rd (Oldfield to 66)	8/1.5/1.5	1940	300	20	667	2014	TG,OL,LB,FM	90	2026	NONE									
	TOTAL			7,924.00								0.00	0.00	0.00	0.00	0.00	0.00	1,400.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXIII	Tara Hill																			
1	Dunmore Dr	8/1.5/1.5	1989	1000	30	3333	2013	TG,BR,FM,LB,OL	89	2025	NONE									
2	Tara Hill Rd	8/1.5/1.5	1989	1300	30	4333	2013	TG,BR,FM,LB,OL	89	2025	NONE									
3	Carlow Dr	8/1.5/1.5	1989	1500	30	5000	2013	TG,BR,FM,LB,OL	89	2025	NONE									
4	Brandon Rd	8/1.5/1.5	1989	1060	30	3533	2013	TG,BR,FM,LB,OL	89	2025	NONE									
5	Kerry Ln	8/1.5/1.5	1989	660	30	2200	2013	TG,BR,FM,LB,OL	89	2025	NONE									
6	Middleton Rd	8/1.5/1.5	1989	1060	30	3533	2013	TG,BR,FM,LB,OL	89	2025	NONE									
7	Kilkenny Dr	8/1.5/1.5	1989	1200	30	4000	2013	TG,BR,FM,LB,OL	89	2025	NONE									
	TOTAL			7,780.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XX1V	Carriage Greens #4																			
1	Royal Swan Ln	9/1.5/1.5	1990	1250	27	3750	2001	EG,OL,LB,FM	70	2017	NONE								2006	
2	Black Swan Ct	9/1.5/1.5	1990	200	27	600	1997	EG,OL,LB	69	2015	TG,BR,LB,OL	200	100	54	600	600	27			
3	Lake Ridge Dr	9/1.5/1.5	1990	1630	27	4890	2004	EG,OL,LB,FM	75	2019	NONE									
4	Gleneagles Ln	10/1.5/1.5	1988	720	27	2160	2007	EG,OL,LB,FM	83	2022	NONE								2013	
5	Gleneagles Ln (Bubbles)	10/1.5/1.5	1988	270	20	600	2007	EG,OL	83	2022	NONE								2013	
6	Carlisle Ct	6/6/	1979	1820	30	6067	2005	TG,OL,LB,FM,BR	77	2020	NONE									
7	Kimberly Ct	6/6/	1979	360	30	1200	2005	TG,OL,LB,FM,BR	79	2021	NONE									
8	Kentwood Ct	6/6/	1979	1060	30	3533	2005	TG,OL,LB,FM,BR	76	2019	NONE									
	TOTAL			7,310.00								200.00	100.00	54.00	600.00	600.00	27.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
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PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXV	Brookeridge																			
1	86th St	6/1.5/1.5	1978	500	30	1667	2007	EG, OL,LB,FM	83	2022	NONE								2013	
2	Creekside Ln	6/1.5/1.5	1978	2500	28	7778	2013	EG, OL,LB,FM	90	2026	NONE								2006	
3	Woodview Ct	6/1.5/1.5	1978	360	30	1200	2007	EG,OL,BR,LB,TM	83	2022	NONE								2013	
4	Kentwood Ct (CDS)	6/2/2.0	1978	500	30	1667	2011	EG,OL,LB	87	2023	NONE								2014	
5	Kearney Rd (Creekside Ln N 7	6/ /1.5	1940	770	27	2310	2007	BR,EG,OL,LB,FM	81	2021	NONE								2013	
	TOTAL			4,630.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXVI	Carriage Greens 1 & 2																			
1	Carr Greens Dr (Frontage-Old Oak	10/ /2	1968	200	20	444	2013	EG,OL,LB	89	2025	NONE									
2	Carr Greens Dr (Frontage-Old Oak	10/ /2	1968	200	20	444	2013	EG,OL,LB	89	2025	NONE									
3	Carr Green Dr (Old Oak-Coachmar	10/ /2	1968	1440	37	5920	2013	EG,OL,LB	89	2025	NONE									
4	Carr Green Dr (Coachman-end)	10/ /2.5	1972	1260	25	3500	2013	EG,OL,LB	89	2025	NONE									
5	Old Oak Pl	8/ 2.5 /1.5	1968	700	25	1944	2009	TG,B,OL	81	2021	CF							300	2012	2015
6	Old Oak Pl (East of CG)	8/ 2.5 /1.5	1989	250	30	833	2009	TG,B,OL	85	2023	CF							500	2012	2015
7	Royal Oak Rd	8/ 2.5 /1.5	1968	800	25	2222	2009	TG,B,OL	85	2023	CF							500	2012	2015
8	Royal Oak Rd (East of CG)	6/ 1/1.5	1989	350	30	1167	2006	EG,OL,LB,FM	83	2022	NONE							300	2012	2015
9	Coachmans Rd	10/ /2.5	1972	880	37	3618	2013	EG,OL,LB,FM	89	2025	NONE								2007	
10	Gleneyre Rd	10/ /2.5	1972	1100	25	3056	2013	EG,OL,LB,FM	89	2025	NONE								2007	
11	Heather Ln	6/ /1.5	1968	800	25	2222	2013	EG,OL,LB,FM	89	2025	NONE								2007	
12	Fox Hill Pl	6/ /1.5	1968	720	25	2000	2011	TG,OL,LB,FM	87	2023	NONE								2014	
13	Laurel Ln	6/ /1.5	1968	350	25	972	2006	TG,OL,LB,FM	82	2022	NONE								2013	
	TOTAL			9,050.00								0.00	0.00	0.00	0.00	0.00	0.00	1,600.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXVII	Carriage Greens 3																			
1	Evergreen Lane	8/2/1.5	1986	2613	28	8129	2001	EG,OL,LB,FM	67	2015	NONE								2006	
2	Thistlewood Ln	10/1.5/1.5	1987	1125	30	3750	2010	TG,OL,LB,FM	86	2023	NONE								2013	
3	Willowcreek Ln	8/2/1.5	1986	990	28	3080	2003	EG,OL,LB,FM	77	2020	NONE								2014	
4	Winterberry Ln	8/2/1.5	1986	780	28	2427	2003	EG,OL,LB,FM	79	2021	NONE								2014	
5	Evergreen Ct	8/2/1.5	1986	220	30	733	2009	TG.B.OL	85	2023	CF							200	2012	2015
	TOTAL			5,728.00								0.00	0.00	0.00	0.00	0.00	0.00	200.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXVIII	Pinehurst																			
1	Pinehurst Dr	8/2.5/1.5	1988	1510	28	4698	2009	TG,B,OL	85	2023	CF							1600	2012	2015
2	Pine Bluff Ct	8/2.5/1.5	1988	333	35	1295	2009	TG,B,OL	85	2023	CF							600	2012	2015
3	Pine Cove Ct	8/2.5/1.5	1988	340	34	1284	2009	TG,B,OL	85	2023	CF							600	2012	2015
4	Pine View Ct	8/2.5/1.5	1988	600	35	2333	2009	TG,B,OL	85	2023	CF							600	2012	2015
5	Pinehurst (CDS)	8/2.5/1.5	1988	200	28	622	2009	TG,B,OL	85	2023	CF							600	2012	2015
	TOTAL			2,983.00								0.00	0.00	0.00	0.00	0.00	0.00	4,000.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXIX	Sawmill Creek																			
1	Oakley Dr	9/1./1.5	1978	500	30	1667	2008	TG,BR,FM,LB,OL	84	2022	NONE								2014	2017
2	Golfview Dr	9/1./1.5	1978	800	30	2667	2008	TG,BR,FM,LB,OL	84	2022	NONE								2014	2017
3	Sawmill Creek Dr	9/1./1.5	1978	920	30	3067	2008	TG,BR,FM,LB,OL	84	2022	NONE								2014	2017
4	Dickens Cir	9/1./1.5	1978	440	30	1467	2008	TG,BR,FM,LB,OL	84	2022	NONE								2014	2017
	TOTAL			2,660.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXX	Devonshire																			
1	Knottingham Cir	8/2/1.5	1983	1800	30	6000	2014	EG,OL,LB,FM	90	2026	NONE									
2	Ashley Ct	8/2/1.5	1983	225	30	750	2010	TG,OL,LB,FM	86	2023	NONE									
3	Durham Cir	8/2/1.5	1983	300	30	1000	2010	TG,OL,LB,FM	86	2023	NONE									
	TOTAL			2,325.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXXI	Bailey Park																			
1	Bailey Rd	9/1.5/1.5	1988	5550	34	20967	2007	EG,OL,LB,FM	81	2021	NONE								2013	
2	Stewart Dr	9/1.5/1.5	1988	1400	27	4200	2012	TG,OL,LB,FM	88	2025	CF							400		2015
3	Barrymore Dr	9/1.5/1.5	1988	1500	27	4500	2012	TG,OL,LB,FM	88	2025	CF							800		2015
4	Lakeview Dr	14/2/1.5	1978	3800	37	15622	2010	TG,OL,LB,FM	85	2023	NONE								2013	
	TOTAL			12,250.00								0.00	0.00	0.00	0.00	0.00	0.00	1,200.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXXII	Marco Estates																			
1	Marco Ct	10/1.5/1.5	2000	500	30	1667	2004	New Const.	77	2020	NONE								2013	
XXXIII	Smart Oaks Glen																			
1	Chapman Ct	10/1.5/1.5	1997	800	24	2133	1999	New Const.	67	2015	TG,BR,LB,OL	800	100.0	192	2133	2133	96			
2	Chapman Dr	10/1.5/1.5	1997	800	27	2400	1999	New Const.	67	2015	TG,BR,LB,OL	800	100.0	216	2400	2400	108			
3	Adams St	10/1.5/1.5	1992	620	27	1860	1996	New Const.	67	2015	TG,BR,LB,OL	620	100.0	167.4	1860	1860	83.7			
4	Von Drash Dr	10/1.5/1.5	1992	450	27	1350	1996	New Const.	70	2017	NONE									
5	Urban Dr	10/1.5/1.5	1992	475	27	1425	1996	New Const.	71	2017	NONE									
6	Westminster Ct	10/1.5/1.5	1986	440	30	1467	2007	EG,OL,LB,FM	81	2021	NONE								2013	
	TOTAL			4,085.00								2,220.00	300.00	575.40	6,393.33	6,393.33	287.70	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXXIV	Farmingdale South																			
1	Greenbriar Ln	8/1.5/1	1960	1200	28	3733	2013	EG,OL,LB	89	2025	NONE									
2	Pine Ct	8/1.5/1	1960	600	28	1867	2012	EG,OL,LB	88	2025	CF								500	2015
3	Adams St	8/2/1.5	1960	1000	28	3111	2010	TG,OL,LB,FM	85	2023	NONE								2113	
4	Iroquois St	8/1.5/1	1960	1040	28	3236	2013	EG,OL,LB	89	2025	NONE									
5	Sleepy Hollow Ln	8/1.5/1	1960	1100	28	3422	2012	EG,OL,LB,FM	88	2025	CF								500	2015
6	Grant St	8/1.5/1	1960	660	28	2053	2013	EG,OL,LB	89	2025	NONE									
7	Sleepy Hollow Ln (CDS)	8/1.5/1	1960	200	28	622	2011	TG,OL,LB,FM	87	2023	NONE									
70	Grant St (CDS)	8/1.5/1	1960	300	28	933	2013	EG,OL,LB,FM	89	2025	NONE								2014	
	TOTAL			6,100.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXXV	Pine Parkway																			
1	Pine Parkway	6/1.5/1	1969	900	20	2000	2007	BR,EG,OL,FM,LB	82	2022	NONE								2013	
2	Pine Parkway	6/1.5/1	1969	900	20	2000	2007	BR,EG,OL,FM,LB	82	2022	NONE								2013	
3	Adams St	6/2/1.5	1940	840	18	1680	2009	TG,OL,LB,FM	85	2023	NONE							500	2012	2015
XXXVI	Regency Grove																			
1	Regency Grove Dr	8/1/1.5	1978	2000	28	6222	2009	TG,OL,LB,FM	85	2023	CF							1200	2012	2015
2	Wildwood Ct	8/1/1	1978	400	28	1244	2006	TG,OL,LB,FM	83	2022	NONE									
3	Adams St	8/1/1.5	1978	300	28	933	2009	TG,OL,LB,FM	85	2023	CF							600	2012	2015
	TOTAL			5,340.00								0.00	0.00	0.00	0.00	0.00	0.00	2,300.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	YEAR	2015	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXXVII	Hidden Lakes																			
1	Hinswood Dr	8/1/1.5	1968	1120	37	4604	2008	TG,BR,FM,LB,OL	81	2021	NONE								2014	
2	Sweetwater Ct	12/2/1.5	1993	400	28	1244	2013	TG,BR,FM,LB,OL	90	2026	NONE									
3	Ripple Ridge Dr	12/2/1.5	1993	2750	28	8556	2010	TG,BR,FM,LB,OL	86	2023	NONE								2013	
4	Mystic Trace	12/2/1.5	1993	970	28	3018	2010	TG,BR,FM,LB,OL	86	2023	NONE								2013	
5	Wilmette Ave	12/2/1.5	1993	824	17	1556	1994	BUILDER	69	2015	NONE	850	50	140	1556	1556	70			
6	Captons Ln	9/1.5/1.5	1978	900	30	3000	2007	EG, OL	82	2022	NONE								2013	
7	Dawn Ln	12/2/1.5	1993	620	30	2066	2007	OL,BR FIALA	83	2022	NONE								2013	
8	Ripple Ridge Dr CDS	12/2/1.5	1994	300	30	1000	2004	OL,BR FIALA	78	2018	NONE									
9	Spring Ct	12/2/1.5	1995	300	30	1000	2004	OL,BR FIALA	78	2018	NONE									
	TOTAL			8,184.00								850.00	50.00	140.08	1,556.44	1,556.44	70.04	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXXVIII	Darien Woods																			
1	Darien Woods Ct	10/1.5/1.5	1997	440	30	1467	2002	New Const	70	2017	NONE								2010	
2	Kearney Rd	10/1.5/1.5	1997	600	21	1400	1998	New Const	65	2015	TG,BR,LB,OL	600	50	126	1400	1400	63			
	TOTAL			1,040.00								600.00	50.00	126.00	1,400.00	1,400.00	63.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

		Composition		Pvmnt.	Pvmnt.		Most			Proposed	Recommended							Crackfill	Crackfill	Crackfill
		Aggr./Bind./Surf.	Year	Length	Width	Square	Recent	Description	Cond.	Rehabilitation	Rehabilitation	PROPOSED	BR	OL	FM	Mill	LB	PROPOSED	Year	Year
Number	Location	(inches)	Const.	(feet)	(feet)	Yards	Rehab.	of Work	Rating	*YEAR*	*2015*	LINEAL FEET	(sq. yds)	(tons)	(sq. yds)	(sq. yds)	(tons)	(LF)	COMPLETED	PROPOSED
XXXIX	Waterfall Glen																			
1	Waterfall Glen Blvd	10/1.5/1.5	1997	2130	37	8757	2000	BUILDER	72	2017	NONE									
2	Waverly Ct	10/1.5/1.5	1997	330	29	1063	2000	BUILDER	77	2020	NONE									
3	Forest Glen Ct	10/1.5/1.5	1997	200	29	644	2000	BUILDER	77	2020	NONE									
4	Fountain Point Cir	10/1.5/1.5	1997	200	29	644	2000	BUILDER	79	2021	NONE									
	TOTAL			2,860.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00		

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

SUMMARY SHEET

PAGE NO.	SUBDIVSION	TOTAL CITY ROAD LENGTHS LINEAL FEET	PROPOSED LANE MILES	PROPOSED BASE REPAIR SQUARE YARDS	PROPOSED SURFACE ASPHALT OVERLAY TONS	PROPOSED FABRIC MATERIAL SQUARE YARDS	PROPOSED MiIIING-GRINDING SQUARE YARDS	PROPOSED LEVELING BINDER ASPHALT	PROPOSED CRACK FILL LINEAL FEET
A-1	Marion Hills North	22,570.00	5,100.00	150.00	900.00	10,000.00	10,000.00	450.00	3,000.00
A2	Marion Hills South	13,900.00	-	0.00	0.00	0.00	0.00	0.00	2,000.00
A3	Clarefield	13,045.00	3,393.00	125.00	610.74	6,786.00	6,786.00	305.37	0.00
A4	Farmingdale Heights	3,416.00	-	0.00	0.00	0.00	0.00	0.00	1,300.00
A5	Woodlands	3,171.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A6	North of 67th Street	5,202.00	-	1,470.00	408.90	4,543.33	4,543.33	204.45	0.00
A7	Hinsbrook	49,472.00	1,360.00	50.00	380.80	4,231.11	4,231.11	190.40	3,300.00
A8	Plainfield Highlands	7,590.00	-	0.00	0.00	0.00	0.00	0.00	1,100.00
A9	Farmingdale Terrace North	9,705.00	-	0.00	0.00	0.00	0.00	0.00	400.00
A10	Farmingdale Terrace South	10,685.00	-	0.00	0.00	0.00	0.00	0.00	1,000.00
A11	Farmingdale Terrace West	4,680.00	-	0.00	0.00	0.00	0.00	0.00	2,000.00
A12	Brookhaven 1	15,850.00	-	0.00	0.00	0.00	0.00	0.00	2,700.00
A13	Darien Club	12,640.00	-	0.00	0.00	0.00	0.00	0.00	2,400.00
A14	Farmingdale 5-9	27,297.00	-	0.00	0.00	0.00	0.00	0.00	100.00
A15	Downers Fairview	6,980.00	600.00	100.00	828.00	9,200.00	9,200.00	414.00	0.00
A16	Brookhaven 2	15,850.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A17	Knottingham	2,733.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A18	Farmingdale Ridge	24,980.00	1,490.00	100.00	427.50	4,750.00	4,750.00	213.75	3,700.00
A19	Woodmere	4,841.00	7,958.00	545.00	1,495.03	16,611.44	16,611.44	747.52	0.00
A20	Farmingdale Village	24,980.00	-	0.00	0.00	0.00	0.00	0.00	11,500.00
A21	Carriage Hill	7,924.00	-	0.00	0.00	0.00	0.00	0.00	1,400.00
A22	Tera Hill	7,780.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A23	Carriage Green 4	7,310.00	200.00	100.00	54.00	600.00	600.00	27.00	0.00
A24	Brookeridge	4,630.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A25	Carriage Green 1 &2	9,050.00	-	0.00	0.00	0.00	0.00	0.00	1,600.00
A26	Carriage Green 3	5,728.00	-	0.00	0.00	0.00	0.00	0.00	200.00
A27	Pinehurst	2,983.00	-	0.00	0.00	0.00	0.00	0.00	4,000.00
A8	Sawmill	2,660.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A29	Devonshire	2,325.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A30	Bailey Park	12,250.00	-	0.00	0.00	0.00	0.00	0.00	1,200.00
A31	Marco Estattes Smart Oaks	4,085.00	2,220.00	300.00	575.40	6,393.33	6,393.33	287.70	0.00
A32	Farmingdale South	6,100.00	-	0.00	0.00	0.00	0.00	0.00	0.00
A33	Pine Parkway	5,340.00	-	0.00	0.00	0.00	0.00	0.00	2,300.00
A34	Hidden Lake	8,184.00	850.00	50.00	140.08	1,556.44	1,556.44	70.04	0.00
A35	Darien Wood	1,040.00	600.00	50.00	126.00	1,400.00	1,400.00	63.00	0.00
A36	Waterfall Glenn	2,860.00	-	0.00	0.00	0.00	0.00	0.00	0.00
	TOTALS	**369,836.00**	**23,771.00**	**3,040.00**	**5,946.45**	**66,071.67**	**66,071.67**	**2,973.23**	**45,200.00**
	MILES	**70.04**	**4.50**						

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

COST SUMMARY BREAKDOWN

PROPOSED LINEAL FEET/LANE MILES		PROPOSED BASE REPAIR SQUARE YARDS	PROPOSED SURFACE ASPHALT OVERLAY TONS	PROPOSED FABRIC MATERIAL SQUARE YARDS	PROPOSED MiIIING-GRINDING SQUARE YARDS	PROPOSED LEVELING BINDER ASPHALT	PROPOSED CRACK FILL LINEAL FEET
LINEAL FEET	**23,771.00**	**3,040.00**	**5,946.45**	**66,071.67**	**66,071.67**	**2,973.23**	**45,200.00**
MILES	**4.50**						

DESCRIPTION		UNIT	UNIT COST	QUANTITY	TOTAL COST
BITUMINOUS MATERIALS (PRIME COAT)		GAL	$1.65	660.72	$1,090.18
AGGREGATE (PRIME COAT)		TON	$16.50	132.14	$2,180.37
AREA REFLECTIVE CRACK CONTROL TREATMENT		SY	$1.10	66,071.67	$72,678.83
BITUMINOUS SURFACE REMOVAL (COLD MILLING) 2.25"		SY	$2.95	66,071.67	$194,911.42
1.5" BITUMINOUS CONCRETE SURFACE COURSE, MIX C, N50 (QC/QA)		TON	$71.65	5,946.45	$426,063.14
3/4" LEVELING BINDER (MACHINE METHOD), SUPERPAVE, IL-4.75, N50 (QC/QA)		TON	$77.20	2,973.23	$229,532.97
CLASS D PATCHES, SPECIAL, 6"		SY	$44.10	3,040.00	$134,064.00
STRUCTURES TO BE ADJUSTED		EACH	$500.00	20.00	$10,000.00
SUBTOTAL					$1,070,520.91
CONTINGENCY (10%)					$ 107,052.09
SUBTOTAL					$1,177,573.00
DESIGN ENGINEERING (5%)					$58,878.65
CORING TESTING SERVICES		LUMP SUM			$15,000.00
				TOTAL =	$1,251,451.65

PROGRAM DESCRIPTION		UNIT	UNIT COST	QUANTITY	TOTAL COST
Crack Seal Program		L.F.	1.38	45,200.00	$62,376.00
CONTINGENCIES		L.F.		4,520.00	$6,237.60
TOTAL CRACK SEAL PROGRAM		L.F.		49,720.00	$68,613.60
TOTAL CRACK SEAL PROGRAM		MILES	7286.4	9.42	$68,613.60

DESCRIPTION-PAVING PROGRAM-BREAKDOWN

COST PER MILE FOR REPAVING		$ 277,971.68
COST PER LINEAL FOOT		$ 52.65
COST PER SQUARE YARD		$ 18.94

DESCRIPTION-CRACK SEAL PROGRAM-BREAKDOWN

COST PER MILE FOR CRACK SEALING		$ 7,286.40
COST PER LINEAL FOOT		$ 1.38

CITY OF DARIEN ROAD MAINTENANCE PLAN
2015
PROPOSED

ENTER CATALOGUE YEAR IN CELL B1	2015
66	2015
67	2015
68	2016
69	2016
70	2017
71	2017
72	2017
73	2018
74	2018
75	2019
76	2019
77	2020
78	2020
79	2021
80	2021
81	2021
82	2022
83	2022
84	2022
85	2023
86	2023
87	2023
88	2024
89	2025
90	2026