Louisville Metro Planning Commission
October 22, 2015

Docket No. 15SUBDIV1003

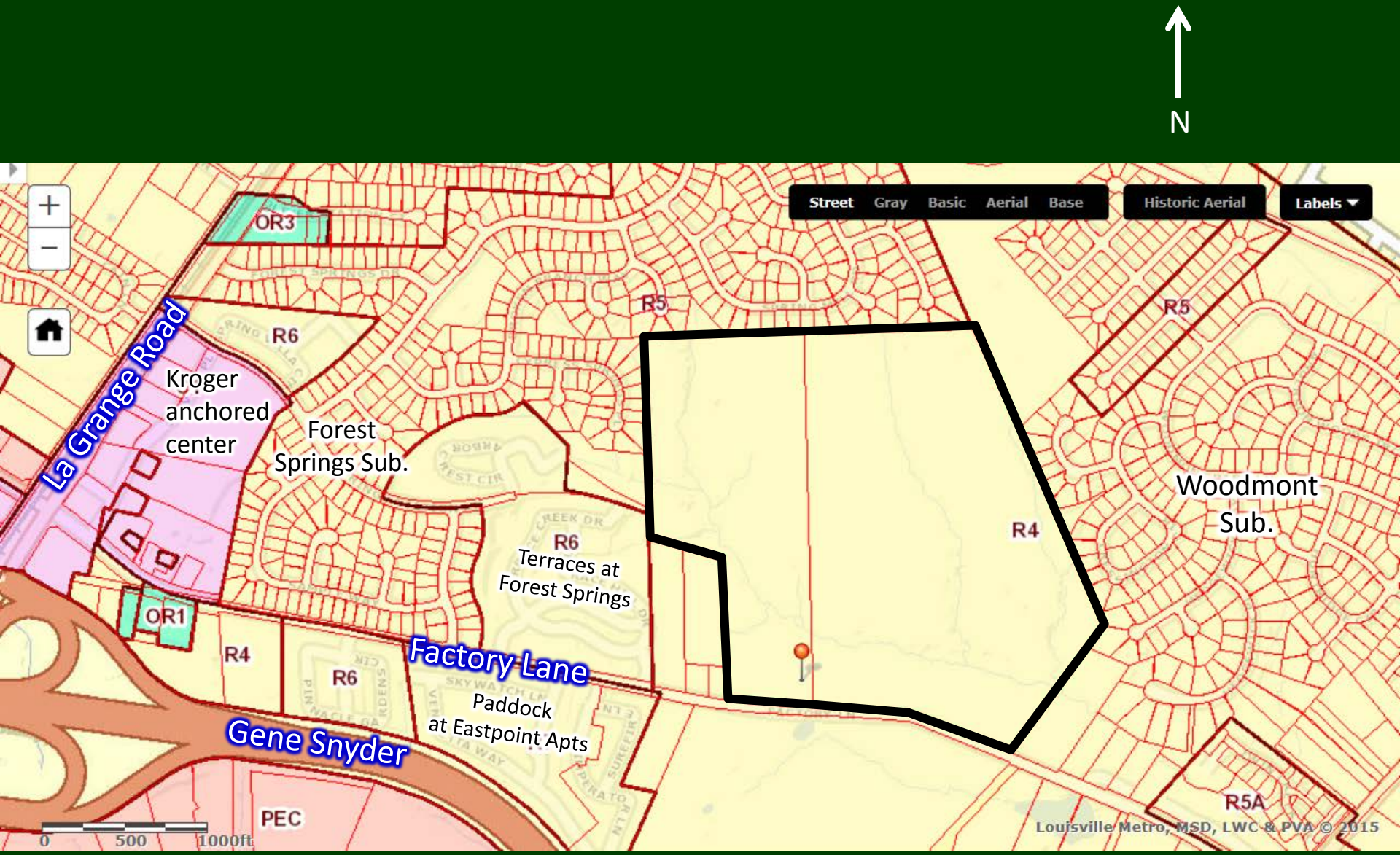
Conservation Subdivision on 122 acres on already zoned R-4 property located at 13605 and 13615 Factory Lane

Attorneys: Bardenwerper Talbott & Roberts, PLLC
Land Planners, Landscape Architects and Engineers: Sabak Wilson & Lingo
Traffic Engineer: Diane B. Zimmerman Traffic Engineering, LLC

Index

1. LOJIC Zoning Map
2. Aerial photographs of the site and surrounding area
3. Explanation of progression of development in this east Louisville Metro area, leading to development of remaining infill sites, notably the St. Joseph Catholic Orphan Society properties
4. 3/17/15 neighborhood meeting notice list map, letter to neighbors inviting them to the meeting and summary of meeting
5. Ground level photographs of the site and surrounding area
6. Environmental Resource Map (and infrastructure plan)
7. Conservation Subdivision Plan
8. Photographs of proposed home types
9. Traffic Study
10. Statutory/Case Law regarding contents of subdivision regulations and review of subdivisions
11. Written justification, in addition to Conservation Plan and exhibits, demonstrating compliance with LDC Section 7.11.4.B.9 requirement

Tab 1
LOJIC Zoning Map


N
Street
Gray
Basic
Aerial
Base
Historic Aerial
Labels
OR3
R6
R5
R5
La Grange Road
Kroger
anchored
center
Forest
Springs Sub.
Woodmont
Sub.
R4
R6
Terraces at
Forest Springs
OR1
R4
R6
Factory Lane
Paddock
at Eastpoint Apts
Gene Snyder
PEC
R5A
0
500
1000ft
Louisville Metro, MSD, LWC & PVA © 2015

Tab 2
Aerial photograph of the site and surrounding area


Street
Gray
Basic
Aerial
Base
Historic Aerial
Labels
La Grange Road
Kroger anchored center
Forest Springs Sub.
Terraces at Forest Springs
Woodmont Sub.
Factory Lane
Paddock at Eastpoint apts
Gene Snyder
265
PEC
R4
R5
R5A
R6
OR1
OR3
0
500
1000ft
Louisville Metro, MSD, LWC & PVA © 2015

N

N

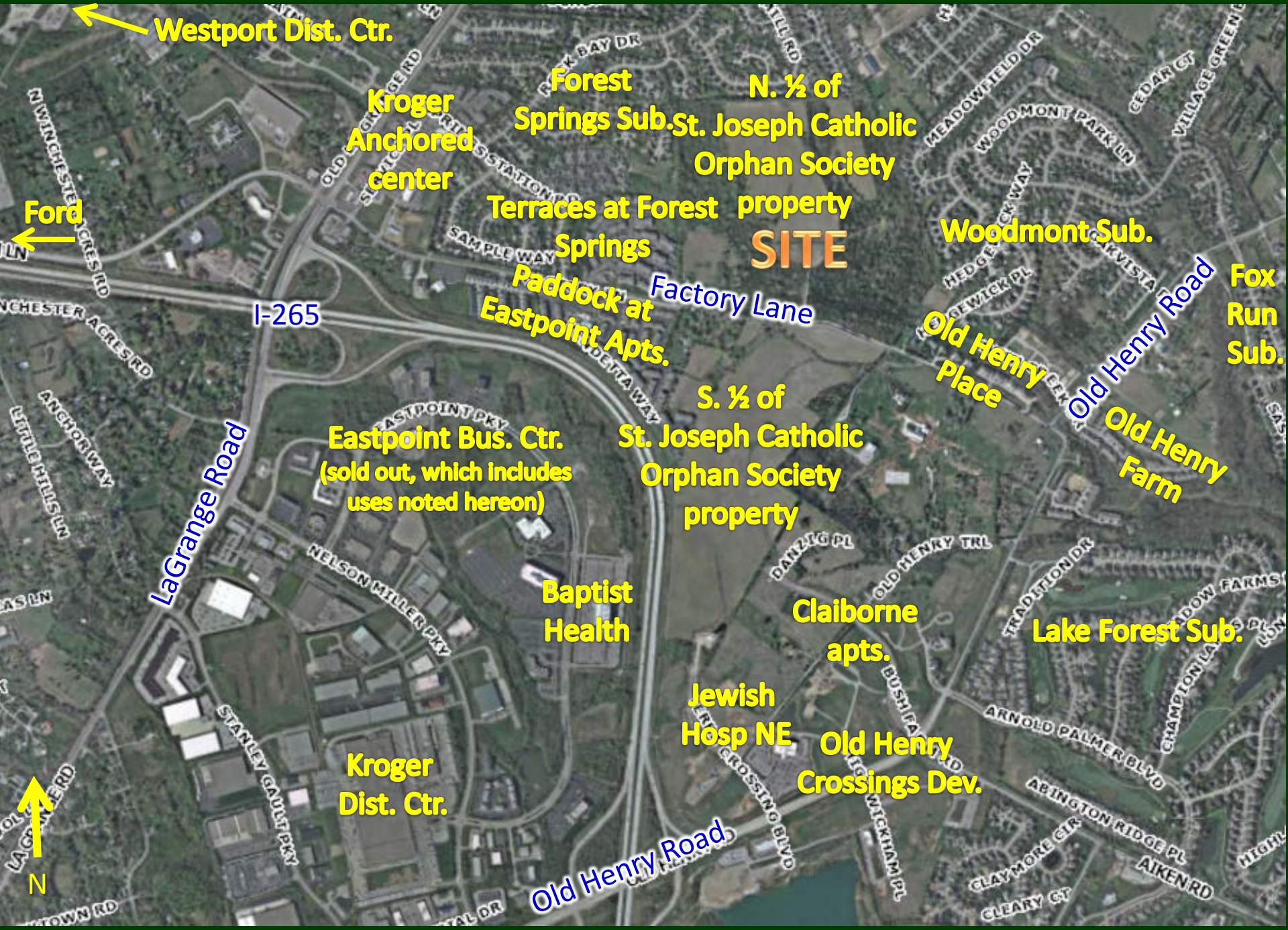
Aerial view looking west towards site.

N

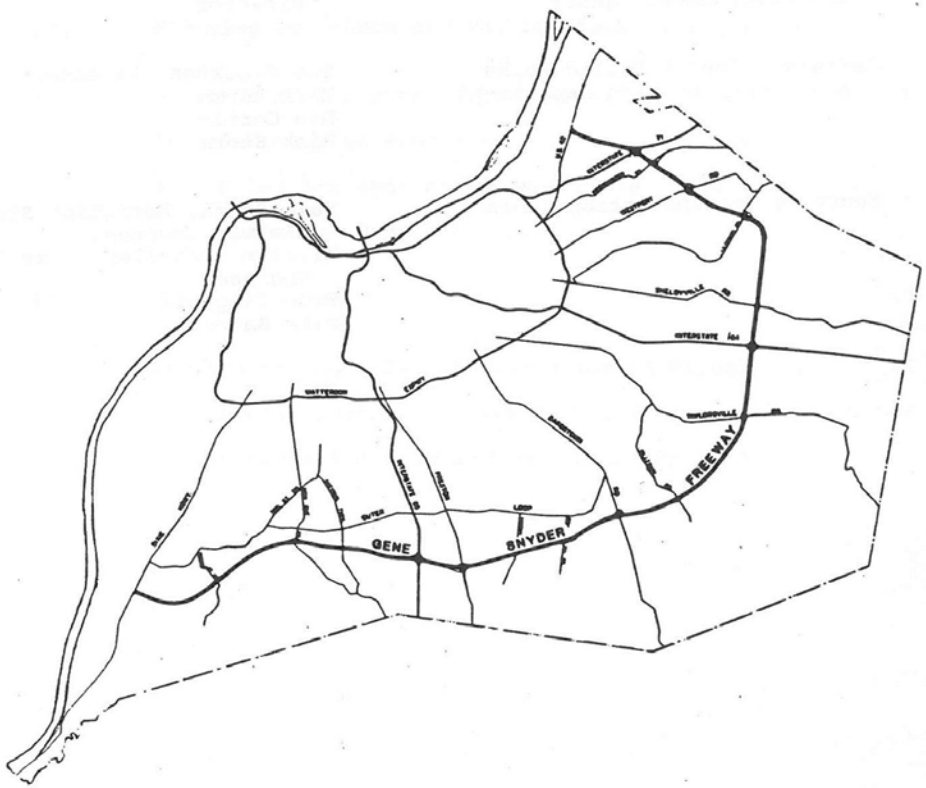
Aerial view looking east towards site.

Tab 3

Explanation of progression of development in this east Louisville Metro area, leading to development of remaining infill sites, notably the St. Joseph Catholic Orphan Society properties


Westport Dist. Ctr.
Ford
Kroger
Anchored
center
Forest
Springs Sub.
N. ½ of
St. Joseph Catholic
Orphan Society
property
Terraces at Forest
Springs
SITE
Woodmont Sub.
Fox
Run
Sub.
I-265
Factory Lane
Paddock at
Eastpoint Apts.
Old Henry
Place
Old Henry Road
Old Henry
Farm
S. ½ of
St. Joseph Catholic
Orphan Society
property
Eastpoint Bus. Ctr.
(sold out, which includes
uses noted hereon)
LaGrange Road
Baptist
Health
Claiborne
apts.
Lake Forest Sub.
Jewish
Hosp NE
Old Henry
Crossings Dev.
Kroger
Dist. Ctr.
Old Henry Road
N

SNYDER FREEWAY CORRIDOR STUDY:



Louisville and Jefferson County
Planning Commission

May, 1989


I-265
Street
Gray
Basic
Aerial
Base
Eastpoint Business Center
beg. @ 1989
Old LaGrange Rd
Nelson Miller Parkway
Stanley Gault Parkway
Old Henry Road
265
EASTPOINT PKY
OBANNON STATION WAY
TRITON PARK BLVD
FOREST CENTRE CT
LAKE POINT CIR
WILLIAMSON
VENDETTA WAY
SURE FIRE LN
S WINCHESTER ACRES RD
ANCHOR WAY
N ENGLISH STATION RD
LILLY LN
DANZIG PL
PULPIT DR
WICKHAM GREEN WAY
TERRA CROSSING BLVD
OLD HENRY FARM CT
TERRA VIEW TRL
Louisville

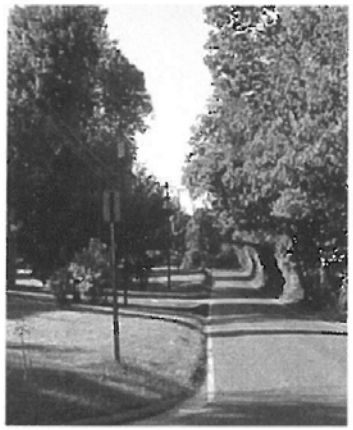

Forest Spring
beg. @
1997
LaGrange Road
Factory Lane
I-265
LA GRANGE RD
OLD LA GRANGE RD
SERVICE WAY
CHAMBERLAIN CROSSING DR
SPRING VILLA CIR
SPRING VILLA CT
ROCK BAY DR
ROCK BAY CT
BROKEN BRANCH PL
BROKEN BRANCH WAY
CYPRESS SPRINGS DR
SPRINGS STATION RD
SAMPLE WAY
SPRING ARBOR DR
ARBOR CREST CIR
SQUIRE SPRINGS CT
SAMPLE CT
TERRACE HILL DR
TERRACE SPRINGS DR
TERRACE CREEK DR
FACTORY LN
SKYWATCH LN
PINNACLE GARDENS CIR
Base

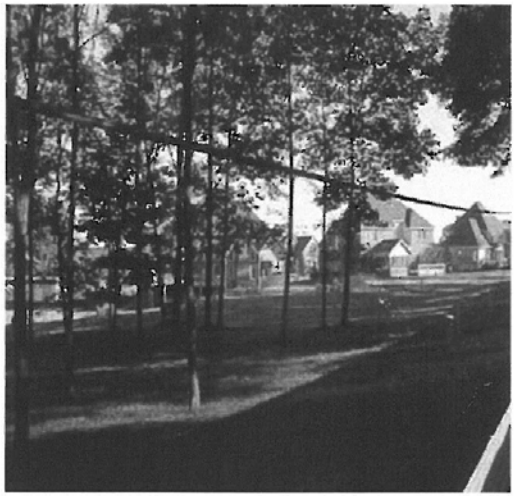

SITE
Woodmont Subdivision
beg. @ 1998
Factory Lane
Old Henry Road
MEADOW CREST CT
SPRING MILL PL
FOREST CREST WAY
FAIRFIELD MEADOWS DR
FAIRFIELD HILL CT
MEADOWFIELD DR
REAMERS RD
CEDAR CT
WOODMONT PARK LN
HEDGEWICK WAY
HEDGEWICK PL
OAKVISTA PL
OAKVISTA WAY
FACTORY LN
CYPRESS GLEN DR
TWIN CREEK DR
SUREFIRE LN

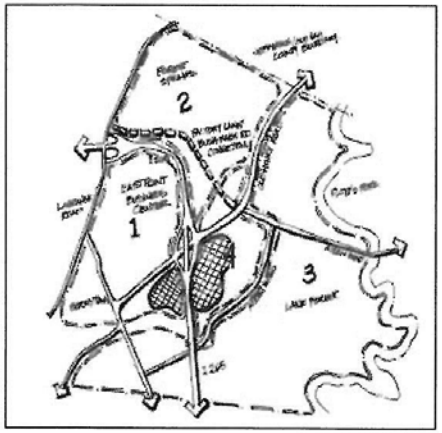

LaGrange Road
Factory Lane
I-265
Forest Springs
Sub. beg. @ 1998
SPRING VILLA CIR
SPRING VILLA CT
ROCK BAY DR
ROCK BAY CT
BROKEN BRANCH PL
BROKEN BRANCH WAY
CYPRESS SPRINGS DR
CHAMBERLAIN CROSSING DR
OLD LA GRANGE RD
LA GRANGE RD
SERVICE PL
SERVICE WAY
SPRINGS STATION RD
SAMPLE WAY
SAMPLE CT
SPRING ARBOR DR
ARBOR CREST CIR
TERRACE HILL DR
TERRACE SPRINGS DR
TERRACE CREEK DR
FACTORY LN
SKYWATCH LN
PINNACLE GARDENS CIR
Base

OLD HENRY ROAD

Subarea Plan







FINAL DRAFT

MARCH, 2000

PLANNING COMMISSION

TRANSMITTAL FOR FISCAL COURT

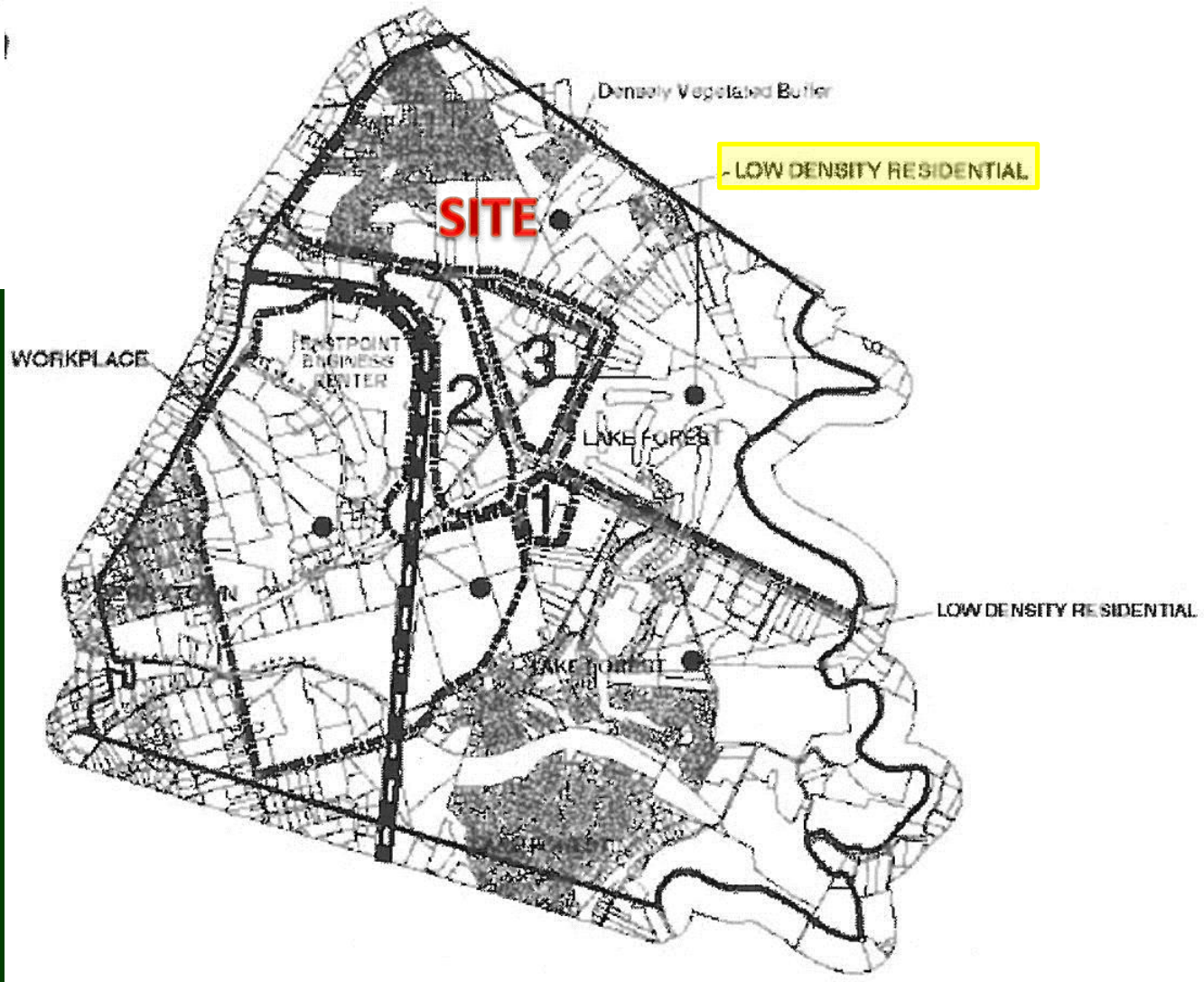
OLD HENRY SUBAREA PLAN

Figure 10:
Recommended Land Use Plan

1 Neighborhood Activity Center

2 Workplace

3 Residential (Low to Medium)



1-265 interchange

Old Henry Road

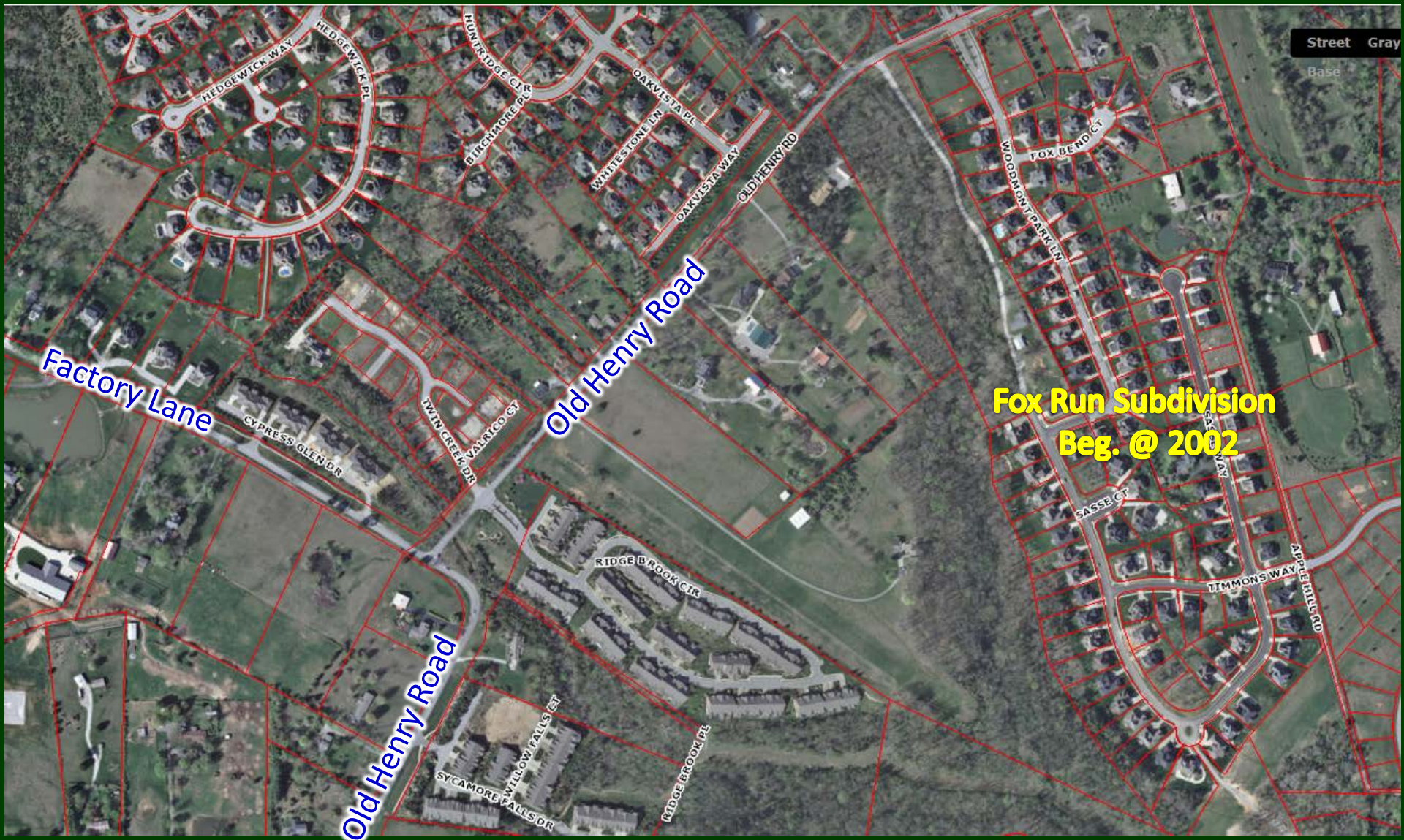
Quarry site

N

Old Henry Crossing Master Plan

Signature Entrance for Hamilton Springs Residential Section – Lot 3


Factory Lane
SKYWATCH LN
BELLISSIMA PL
IMPERATOR LN
SURE FIRE LN
VENDETTA WAY
265
Paddock at Eastpoint Apts
beg. @2001


Street
Gray
Base
Factory Lane
Old Henry Road
Old Henry Road
Old Henry Road
Fox Run Subdivision
Beg. @ 2002
HEDGEWICK WAY
HEDGEWICK PL
HUNTRIDGE CIR
BIRCHMORE PL
OAKVISTA PL
WHITESTONE LN
OAKVISTA WAY
OLD HENRY RD
FOX BEND CT
WOODMONT PARK LN
CYPRESS GLEN DR
TWIN CREEK DR
VALRICO CT
RIDGE BROOK CIR
SASSE CT
ZIMMONS WAY
APPLE HILL RD
SYCAMORE FALLS DR
WILLOW FALLS CT
RIDGE BROOK PL


Retail Ctr.
beg @
2002
Retail Ctr.
beg @
2002
LaGrange Road
Factory Lane
I-265
CHAMBERLAIN CROSSING DR
OLD LA GRANGE RD
LA GRANGE RD
SERVICE PL
SERVICE WAY
SPRING VILLA CIR
SPRING VILLA CT
ROCK BAY DR
ROCK BAY CT
BROKEN BRANCH PL
BROKEN BRANCH WAY
CYPRESS SPRINGS DR
SPRINGS STATION RD
SAMPLE WAY
SPRING ARBOR DR
ARBOR CREST CIR
SQUIRE SPRINGS CT
SAMPLE CT
TERRACE HILL DR
TERRACE SPRINGS DR
TERRACE CREEK DR
FACTORY LN
SKYWATCH LN
PINNACLE GARDENS CIR
Base

Street Gray Basic Aerial

Base

DANZIG PL

PULPIT DR

EDDINGTON WAY

OLD HENRY TRL

265

265

Claiborne Apts
beg. @ 2007

MADISON TRACE CIR

MCKINLEY RIDGE DR

HAMILTON SPRINGS DR

TRADITION

WICKHAM GREEN WAY

TERRA CROSSING BLVD

OLD HENRY FARM CT

HIGH WYCHAM PL

Old Henry Road

PROMENADE GREEN WAY

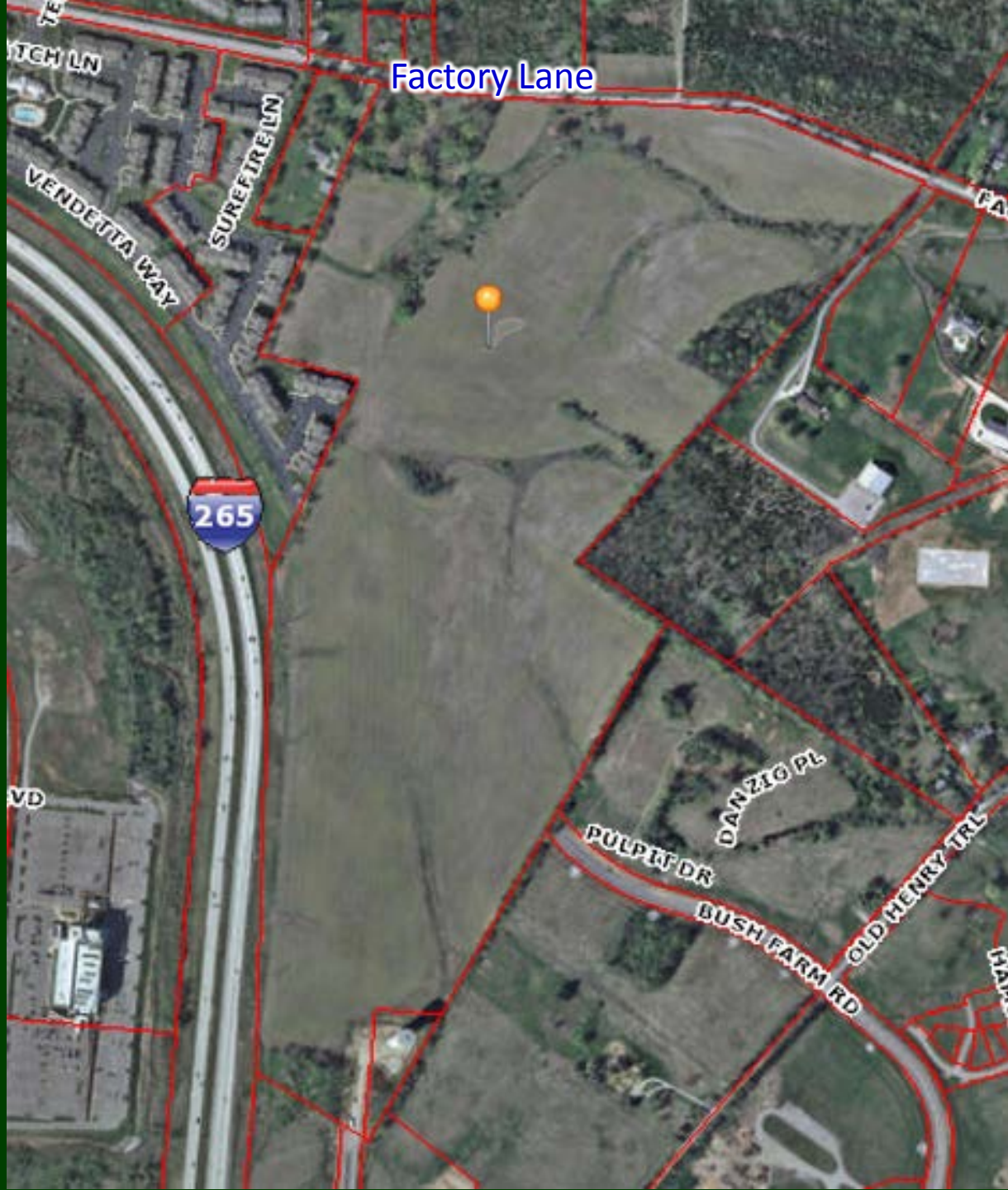
Louisville


Jewish Hospital Northeast
beg. @ 2009
Old Henry Road

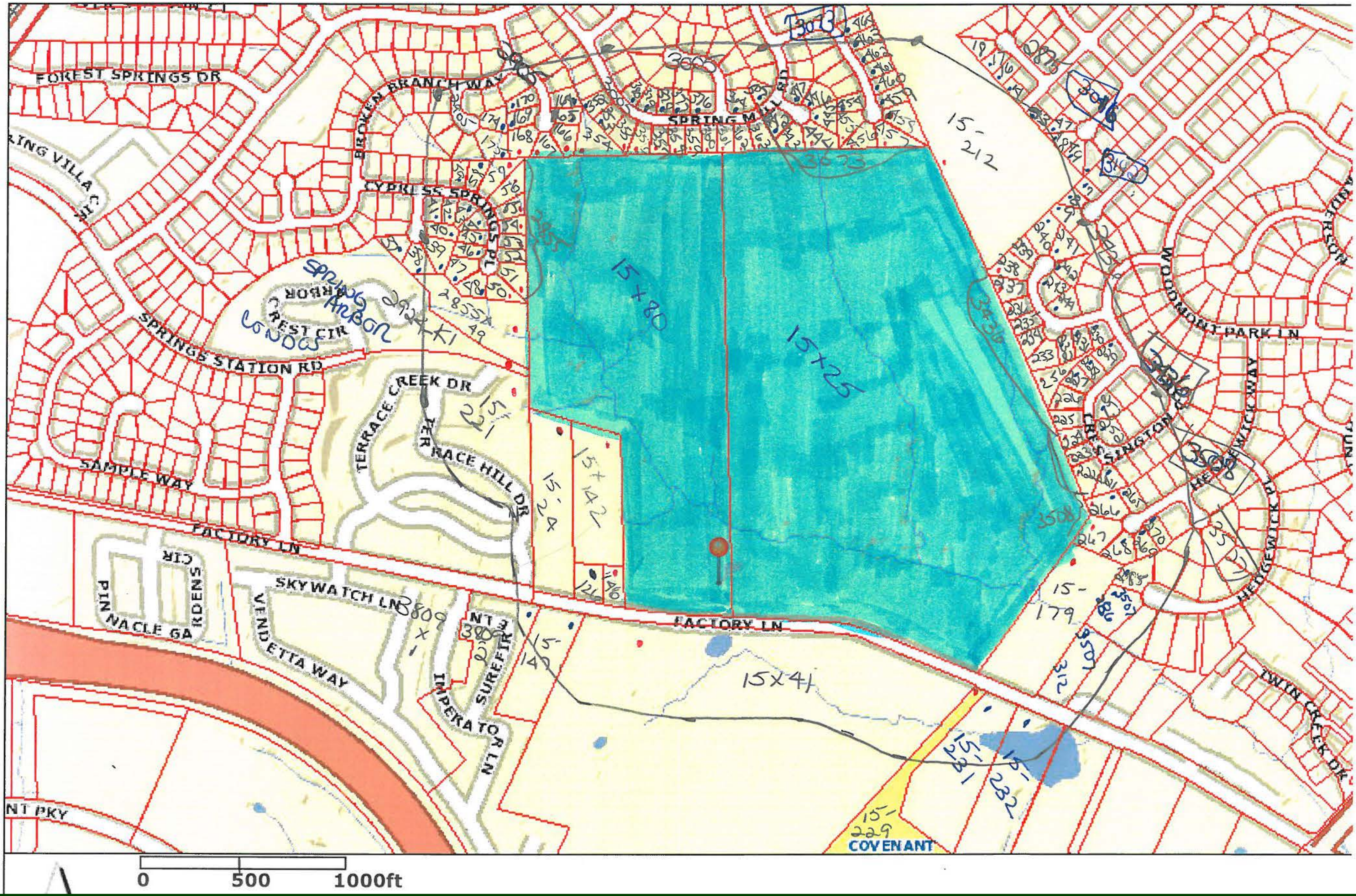

I-265
Street
Gray
Basic
Aerial
Base
VENDETTA WAY
SURE FIRE LN
EASTPOINT PKY
OBANNON STATION WAY
S WINCHESTER ACRES RD
ANCHOR WAY
265
Old LaGrange Rd
Nelson Miller Parkway
TRITON PARK BLVD
DANZIG PL
PULPIT DR
Bapt. Heath
Beg. @ 2009
FOREST CENTRE CT
Stanley Gault Parkway
N ENGLISH STATION RD
LILLY LN
LAKE POINT CIR
WILLIAMSON
WICKHAM GREEN WAY
TERRA CROSSING BLVD
OLD HENRY FARM CT
OLD HENRY RD
Old Henry Road
TERRA VIEW TRL
Louisville

Southern half of St. Joseph Catholic Orphan Society property

(development, including Bush Farm Road extension pending for 2016 review)



Tab 4
3/17/15 neighborhood meeting notice list map, letter to neighbor inviting them to the meeting and summary of meeting


FOREST SPRINGS DR
BROKEN BRANCH WAY
SPRING MILL RD
CYPRESS SPRINGS PL
CREST CIR
SPRINGS STATION RD
TERRACE CREEK DR
TERRACE HILL DR
SAMPLE WAY
FACTORY LN
SKYWATCH LN
VENDETTA WAY
IMPERATOR LN
SUREFIRE
WOODMONT PARK LN
HEDGEWICK WAY
TWIN CREEK DR
COVENANT
NT PKY
15x80
15x25
15x41
15-212
15-179
15-24
15x142
15-221
15-140
15-231
15-232
15-229
0
500
1000ft

Ball Homes.

3609 Walden Drive
Lexington, KY 40517
Phone: 859-268-1191

March 3, 2015

Re: Proposed Conservation Subdivision on a portion of the vacant St. Joseph Orphanage land, specifically 122 acres located at 13605 & 13615 Factory Lane

Dear Neighbor,

We are writing to invite you to a meeting we have scheduled to present neighbors with our plan for a conservation subdivision with 408 lots to be located as above.

This meeting will be held on **Tuesday, March 17th**, at **7:00 p.m.** at **The Community Presbyterian Church** located at **13902 Factory Lane** to discuss our plan with you.

As a neighbor, you are invited to this meeting so that we may describe our plan and address questions or concerns that you or your neighbors may have.

If you cannot attend the meeting but have questions or concerns; please call me, our attorney Bill Bardenwerper at 426-6688, or our land planning and engineering firm representative Kelli Jones at 584-6271.

We look forward to seeing you.

Sincerely,

Rena Wiseman
Associate General Counsel/Development Manager

Cc: Hon. Glen Stuckel, District 17, Metro Councilman
Joe Reverman, Planning Manager with Department of Planning & Design Services
Bill Bardenwerper attorney with Bardenwerper, Talbott & Roberts, PLLC
Kelli Jones, RLA/ASLA, land planner with Sabak, Wilson & Lingo, Inc.

E:\CLIENT FOLDER\Ball Homes\St. Joseph Orphanage\Neigh Mtg\Neigh Mtg Letter 02 25 15.doc

Ball Homes/St. Joe's Property Neighbor Meeting

The neighborhood meeting was called to order by local zoning attorney Bill Bardenwerper at 7 PM on March 17, 2015 at the Community Presbyterian Church on Factory Lane close to the subject property. People invited included more than just two tiers of adjoining property owners but actually multiple tiers, thus a large crowd was present. Among those present were Ball Homes representative Rocco Pigneri and land planner/landscape architect Kelli Jones was the land planning/landscape architecture/engineering firm of Sabak, Wilson and Lingo.

Mr. Bardenwerper began the meeting with a PowerPoint presentation. It showed aerial photographs of the site and area, including farther-out and nearer-in views, in order that neighbors could determine exactly where their homes are located relative to the subject property. Also the proposed subdivision plan was shown, as were plans of the site's varied environmental features.

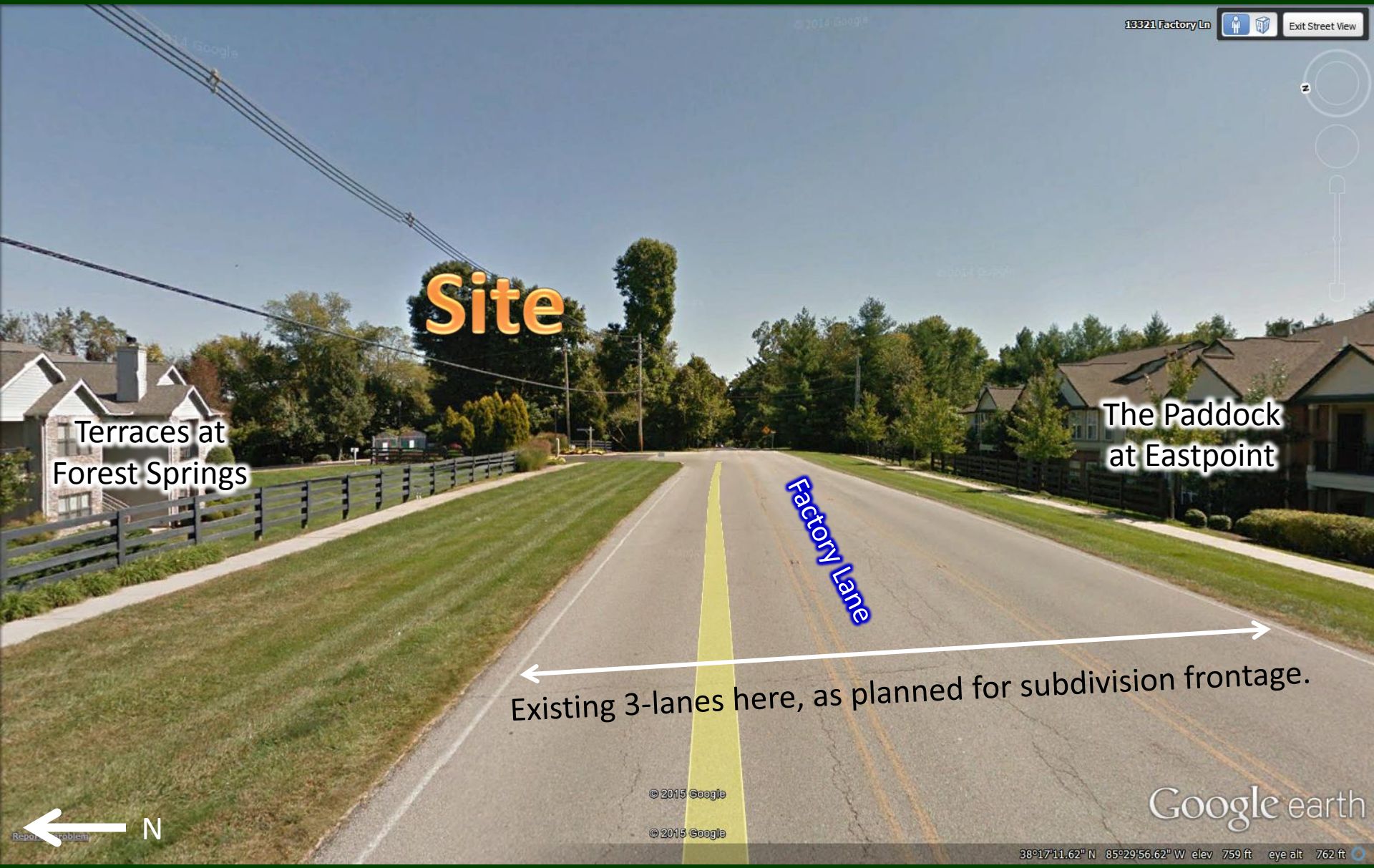
Mr. Bardenwerper explained the conservation subdivision plan regulatory process and how it involves a ministerial, not discretionary, review. He explained how the plan was designed and why it lays out the way it does with lots as shown. Ms. Jones went into greater detail about plan details. Mr. Pigneri explained home designs based on the elevation renderings that Mr. Bardenwerper showed. Diane Zimmerman, transportation engineer with Jacobs group, explained expected traffic generation and distribution at the morning and evening peak hours.

After these introductory comments, the following issues were specifically raised:

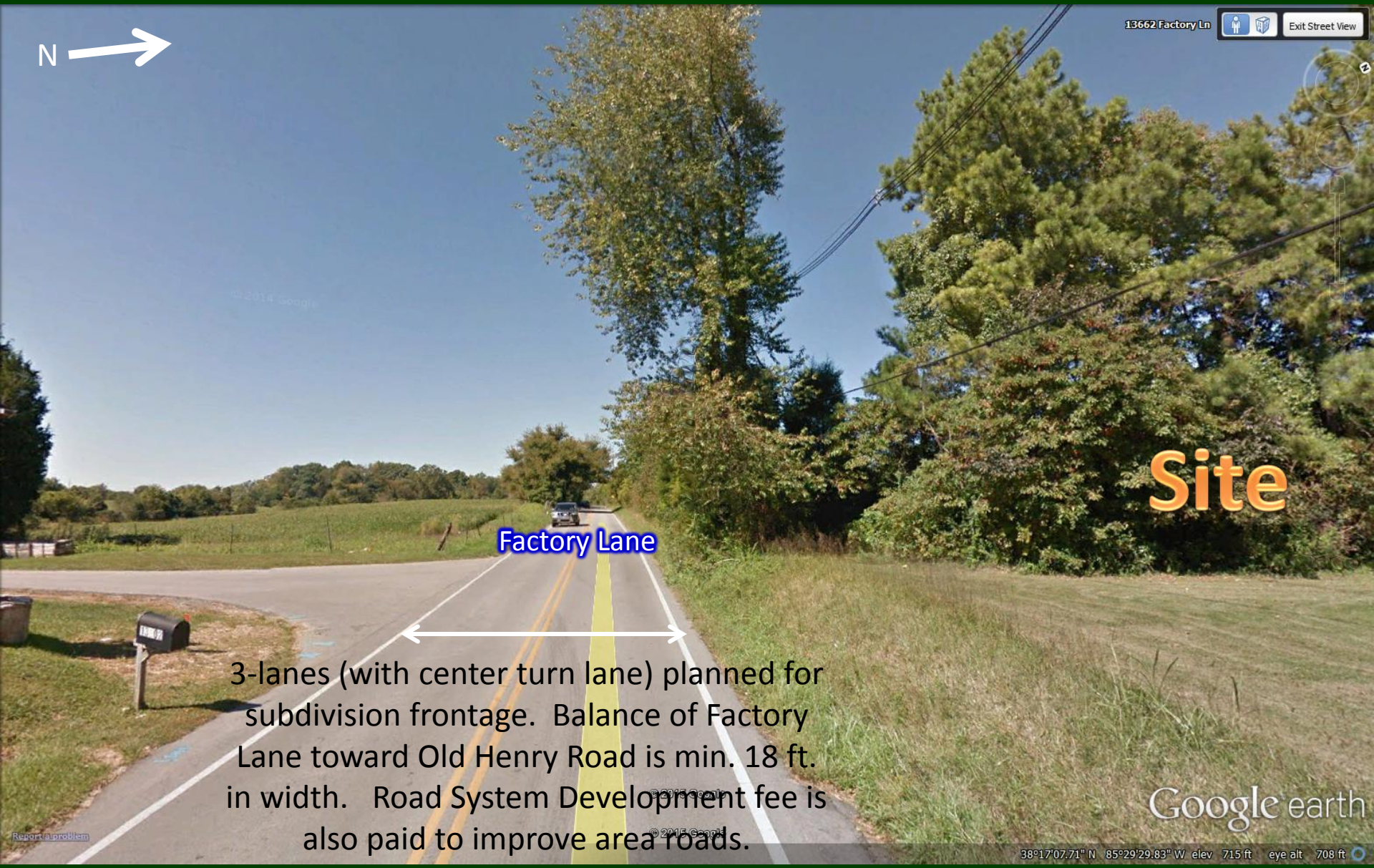
- Klemenz Family will—Orphanage cannot sell property due to conditions of Klemenz Family Will providing property to the orphanage.
- Perimeter buffer depth—30' buffer should be bigger, up to 300' suggested.
- Additional buffer landscaping—Additional landscaping should be added to buffer at north boundary where vegetation has been removed on the orphanage property behind several Forest Springs homes.
- Stub street to west—Representative of Klemenz family to contact me for meeting to discuss why stub at this location, their plans, etc.
- Traffic on Factory Lane—Traffic already too much, current unacceptable conditions to I-265 from site along Factory Lane and Old Henry intersections.
- More brick, less or no siding—especially for houses on lots backing to 30' buffer.
- Many environmental and traffic concerns cited from analysis of south parcel for VA hospital location.
- Lot size, house size, home prices incompatible with surrounding homes. No real attention given to the townhouses so did not discuss size or rental status. Was mentioned that townhomes are planned with front garages.
- We are too greedy with already too many yachts to ski behind.

Many attendees stayed after the meeting to ask questions. Mr. Bardenwerper gave them contacts at the Metro Division of Planning and Design Services (DPDS), Metro Works and Metro Transportation Planning Department.

Tab 5
Ground level photographs of the site and surrounding area



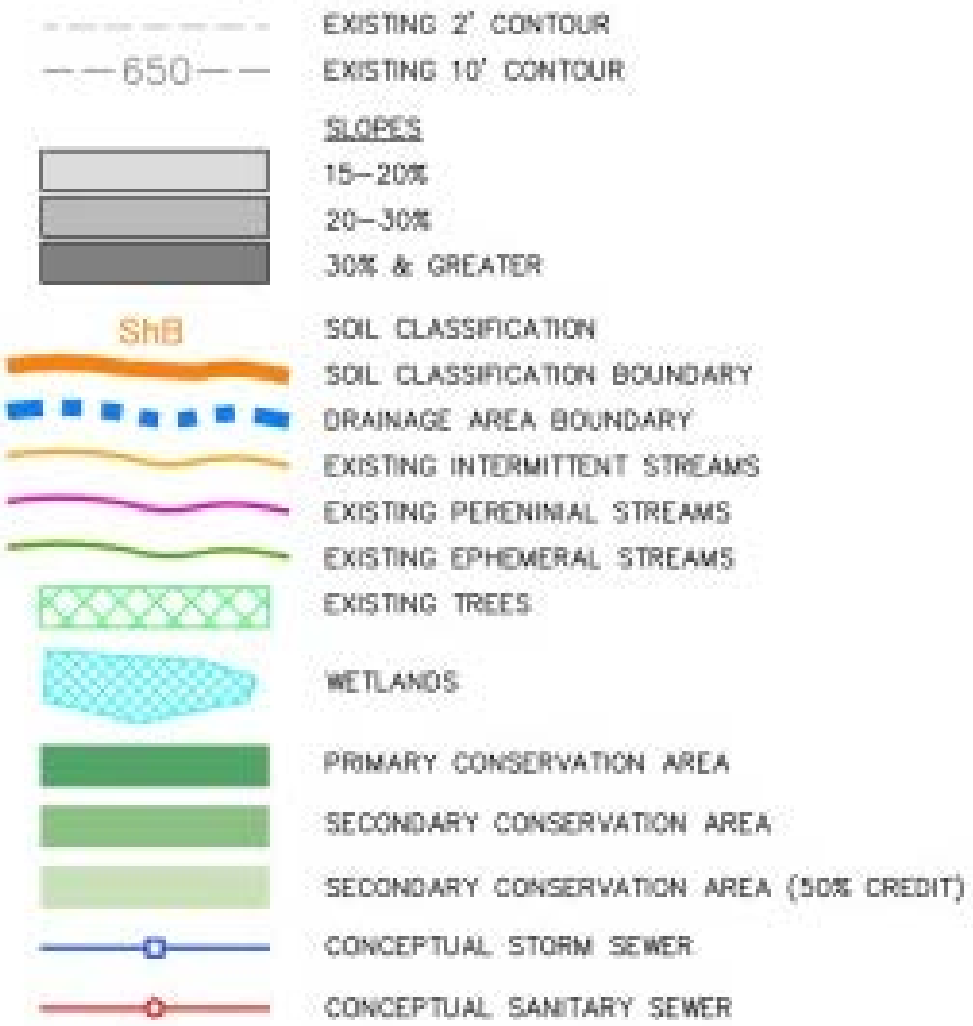
Looking east down Factory Lane towards Old Henry Road. Site is to the left.



Looking west down Factory Lane towards LaGrange Road. Site is to the right.

Tab 6
Environmental Resource Map (and infrastructure plan)

Environmental Resource and Infrastructure Legend

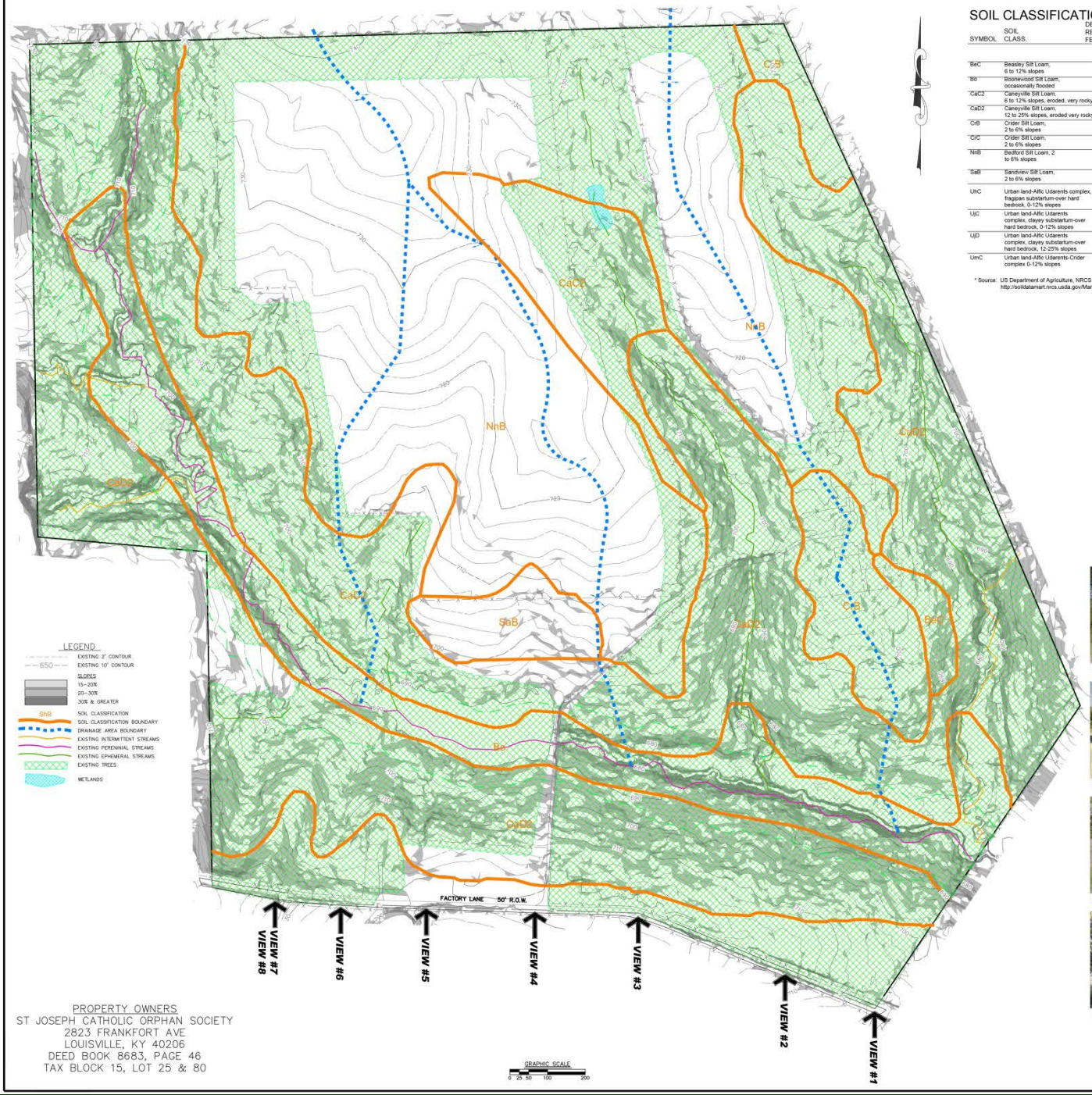


Environmental Resource Map

SOIL CLASSIFICATION TABLE

SYMBOL	SOIL CLASS.	DEPTH TO RESTRICTIVE FEATURE	DWELLINGS w/OUT BASEMENTS	DWELLINGS w/ BASEMENTS	LOCAL ROADS AND STREETS
BeC	Beasley Silt Loam, 6 to 12% slopes	4 - 5'	Somewhat limited, due to shrink-swell & slope	Somewhat limited, due to shrink-swell & slope	Very limited, due to low strength, shrink-swell & slope
Bo	Boonewood Silt Loam, occasionally flooded	2 - 4'	Very limited, due to flooding, depth to saturated zone/hard bedrock	Very limited, due to flooding, depth to saturated zone, and depth to bedrock	Very limited, due to low strength, slope & shrink-swell
CaC2	Caneyville Silt Loam, 6 to 12% slopes, eroded, very rocky	2 - 4'	Somewhat limited, due to depth of bedrock, shrink-swell & slope	Very limited, due to depth of bedrock, shrink-swell & slope	Very limited, low strength, depth of bedrock, shrink-swell & slope
CaD2	Caneyville Silt Loam, 12 to 25% slopes, eroded very rocky	2 - 4'	Very limited, due to slope, depth of bedrock & shrink-swell	Very limited, due to depth of bedrock, slope & shrink-swell	Very limited, low strength, slope, depth of bedrock & shrink-swell
CrB	Crider Silt Loam, 2 to 6% slopes	>6'	Not limited	Not limited	Very limited due to low strength
CrC	Crider Silt Loam, 2 to 6% slopes	>6'	Somewhat limited, due to slope	Somewhat limited, due to depth of cemented pan, slope & shrink-swell	Very limited due to low strength and slope
NnB	Bedford Silt Loam, 2 to 6% slopes	2 - 3'	Somewhat limited, due to shrink-swell, depth to saturated zone, cemented pan	Very limited, due to depth of saturated zone, thick cemented pan, shrink-swell	Very limited, due to frost action, low strength & depth of saturated zone, depth of cemented pan
SaB	Sandview Silt Loam, 2 to 6% slopes	>6'	Not limited	Not limited	Very limited, due to low strength
UhC	Urban land-Alfic Udarents complex, fragipan substartum-over hard bedrock, 0-12% slopes	4 -5'	Not rated	Not rated	Not rated
UjC	Urban land-Alfic Udarents complex, clayey substartum-over hard bedrock, 0-12% slopes	4 -5'	Not rated	Not rated	Not rated
UjD	Urban land-Alfic Udarents complex, clayey substartum-over hard bedrock, 12-25% slopes	4 -5'	Not rated	Not rated	Not rated
UmC	Urban land-Alfic Udarents-Crider complex 0-12% slopes	4 -5'	Not limited	Not limited	Very limited due low strength

* Source: US Department of Agriculture, NRCS of Jefferson County, Kentucky. http://soildatamart.nrcs.usda.gov/Manuscripts/KY111/0/maps/shed21.pdf



PROPERTY OWNERS
ST JOSEPH CATHOLIC ORPHAN SOCIETY
2823 FRANKFORT AVE
LOUISVILLE, KY 40206
DEED BOOK 8683, PAGE 46
TAX BLOCK 15, LOT 25 & 80

VIEW SHED ANALYSIS

OVERGROWN AND INVASIVE VEGETATION PREVENTS VIEWS INTO THE PROPERTY. AS A PART OF DEVELOPMENT, EXISTING VEGETATION WILL BE CLEANED UP AND INVASIVE SPECIES REMOVED. EXISTING TREES THAT ARE IN GOOD HEALTH WILL BE PRESERVED AND ADDITIONAL TREES AND VEGETATION WILL BE PLANTED IN ORDER TO MAINTAIN SCREENED VIEWS INTO THE SITE. EXISTING OVERHEAD POWERLINES WILL PREVENT THE PLANTING OF LARGE TREES ADJACENT TO THE ROADWAY.


VIEW #1


VIEW #2


VIEW #3

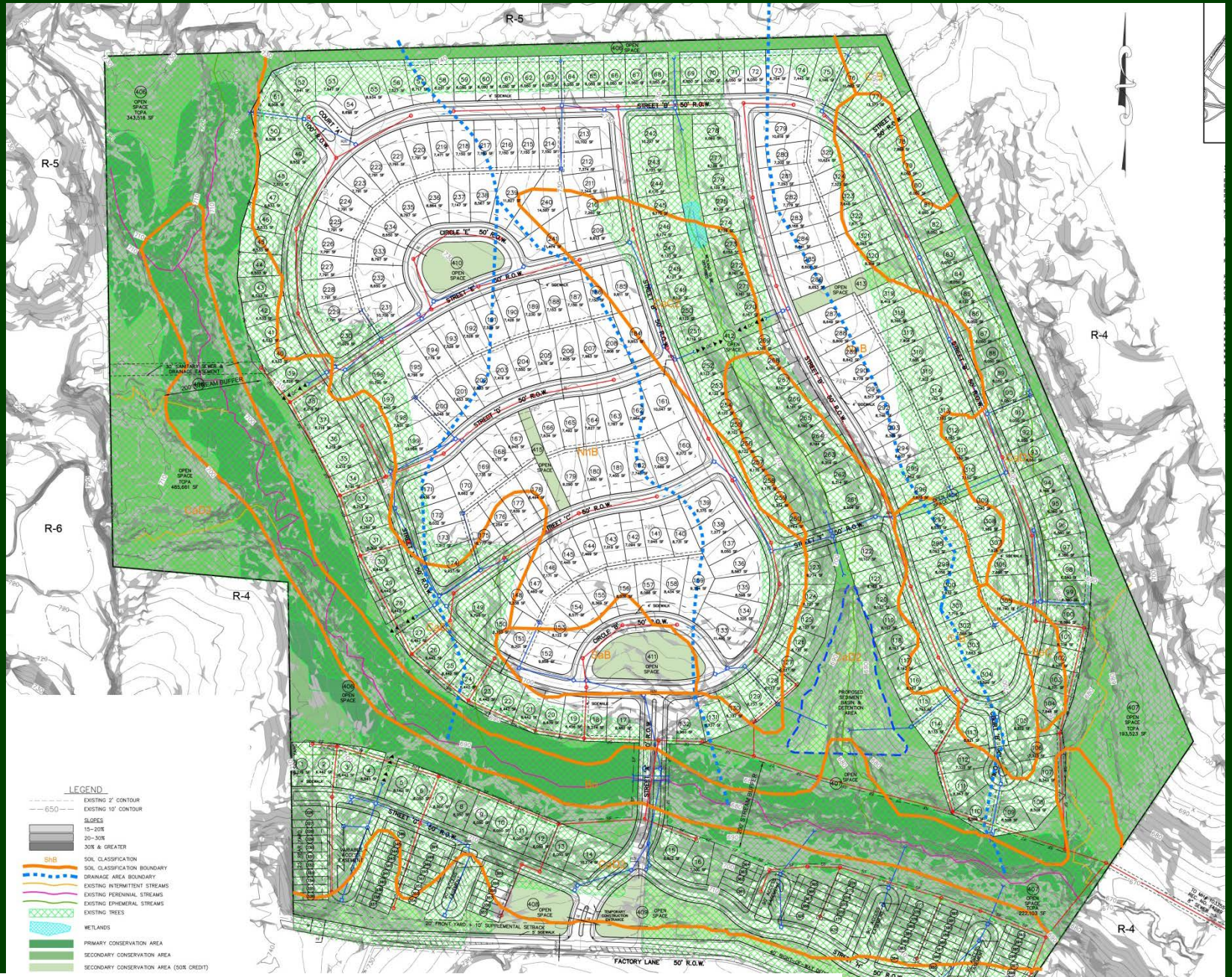

VIEW #4


VIEW #5


VIEW #6

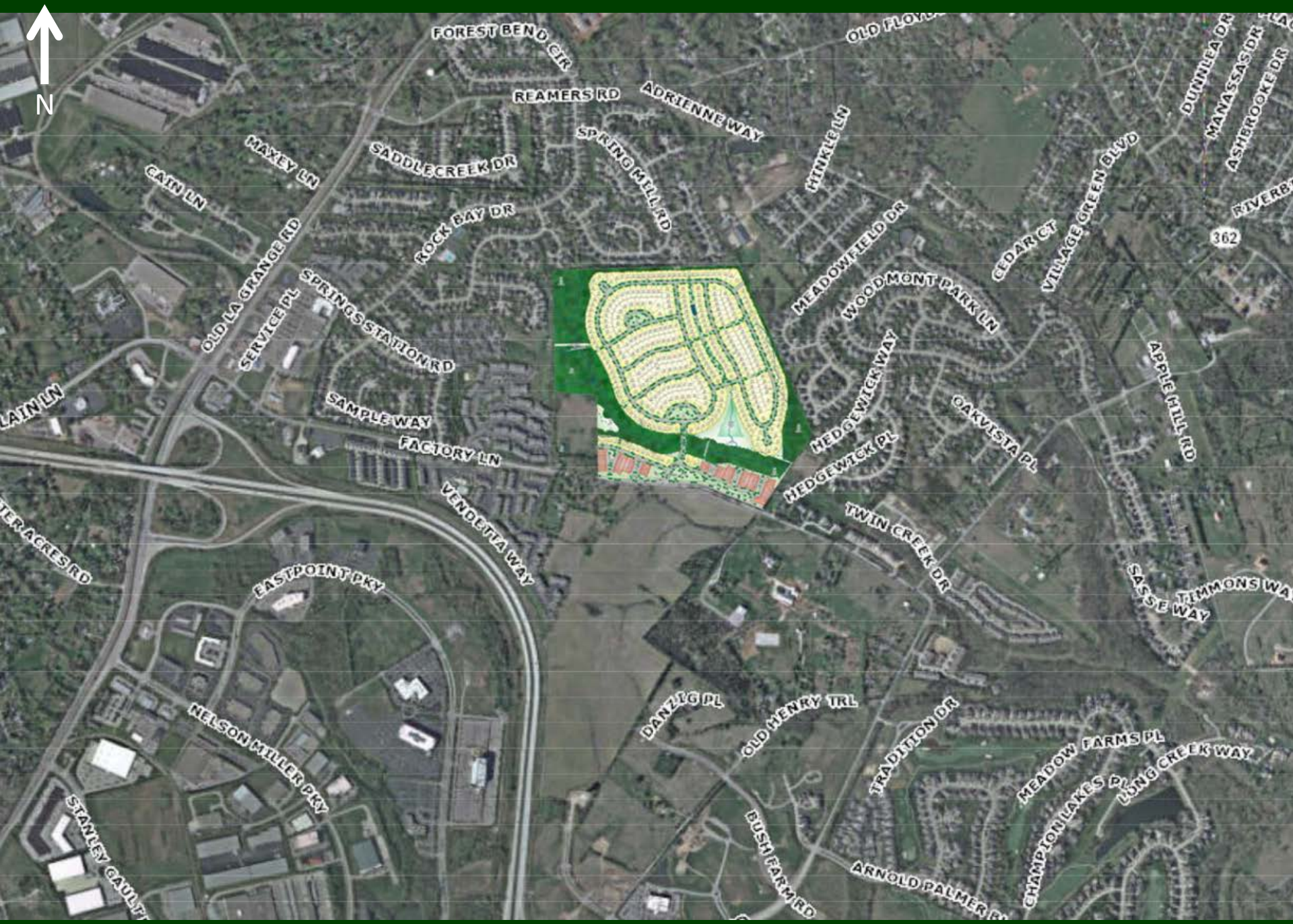

VIEW #7


VIEW #8



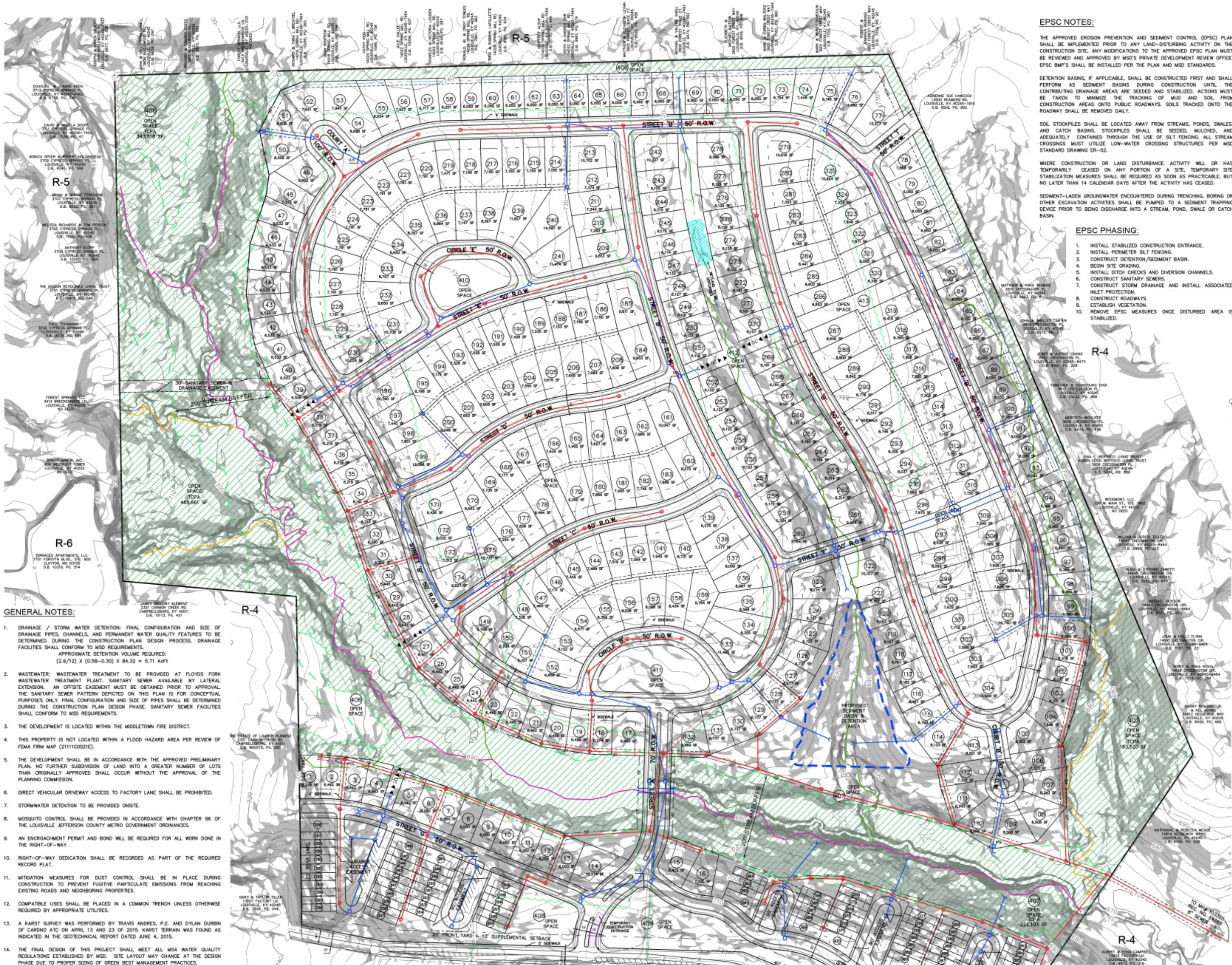
Proposed Conservation Subdivision overlayed on Conservation Resource Map

Tab 7
Conservation Subdivision Plan


N
FOREST BEND CIR
REAMERS RD
ADRIENNE WAY
MAXEY LN
SADDLECREEK DR
SPRING MILL RD
HINKLE LN
CAIN LN
ROCK BAY DR
OLD LA GRANGE RD
SERVICE PL
SPRINGS STATION RD
MEADOWFIELD DR
WOODMONT PARK LN
CEDAR CT
VILLAGE GREEN BLVD
362
SAMPLE WAY
FACTORY LN
HEDGEWICK WAY
HEDGEWICK PL
OAKVISTA PL
APPLE HILL RD
VENDETTA WAY
TWIN CREEK DR
EASTPOINT PKY
NELSON MILLER PKY
DANZIG PL
OLD HENRY TRL
TRADITION DR
MEADOW FARMS PL
LONG CREEK WAY
BUSH FARM RD
ARNOLD PALMER
CHAMPION LAKES PL


N
Forest Springs Sub.
Woodmont Sub.
Terraces at
Forest Springs
Paddock at
Eastpoint Apts.
Factory Lane
BROKEN BRANCH WAY
BROKEN BRANCH PL
CYPRESS SPRINGS LN
SPRING ARBOR DR
ARBOR CREST CIR
SPRINGS STATION RD
TERRACE CREEK DR
FACTORY LN
SKYWATCH LN
MEADOWFIELD DR
WOODMONT PARK LN
OAKLEIGH MEADOW PL
ANDERSON WOODS TRCE
CRESSINGTON PL
CRESSINGTON CIR
HUNTRIDGE PL
HUNTRIDGE CIR
WOODGROVE PL
HEDGEWICK WAY
HEDGEWICK PL
BROADWELL PL
BIRCHMORE PL
WHITESTONE LN
TWIN CREEK DR
OLD HENRY RD


N
Woodmont
Sub.
R-4
R-4
Factory Lane
Entrances



GENERAL NOTES:

1. DRAINAGE / STORM WATER DETENTION: FINAL CONFIGURATION AND SIZE OF DRAINAGE PIPES, CHANNELS, AND PERMANENT WATER QUALITY FEATURES TO BE DETERMINED DURING THE CONSTRUCTION PLAN DESIGN PROCESS. DRAINAGE FACILITIES SHALL CONFORM TO MSD REQUIREMENTS.
   APPROXIMATE DETENTION VOLUME REQUIRED:
   $(2.9/12) \times (0.58-0.30) \times 84.32 = 5.71$ AcFt
2. WASTEWATER: WASTEWATER TREATMENT TO BE PROVIDED AT FLOYDS FORK WASTEWATER TREATMENT PLANT. SANITARY SEWER AVAILABLE BY LATERAL EXTENSION. AN OFFSITE EASEMENT MUST BE OBTAINED PRIOR TO APPROVAL. THE SANITARY SEWER PATTERN DEPICTED ON THIS PLAN IS FOR CONCEPTUAL PURPOSES ONLY. FINAL CONFIGURATION AND SIZE OF PIPES SHALL BE DETERMINED DURING THE CONSTRUCTION PLAN DESIGN PHASE. SANITARY SEWER FACILITIES SHALL CONFORM TO MSD REQUIREMENTS.
3. THE DEVELOPMENT IS LOCATED WITHIN THE MIDDLETOWN FIRE DISTRICT.
4. THIS PROPERTY IS NOT LOCATED WITHIN A FLOOD HAZARD AREA PER REVIEW OF FEMA FIRM MAP (21111C0021E).
5. THE DEVELOPMENT SHALL BE IN ACCORDANCE WITH THE APPROVED PRELIMINARY PLAN. NO FURTHER SUBDIVISION OF LAND INTO A GREATER NUMBER OF LOTS THAN ORIGINALLY APPROVED SHALL OCCUR WITHOUT THE APPROVAL OF THE PLANNING COMMISSION.
6. DIRECT VEHICULAR DRIVEWAY ACCESS TO FACTORY LANE SHALL BE PROHIBITED.
7. STORMWATER DETENTION TO BE PROVIDED ONSITE.
8. MOSQUITO CONTROL SHALL BE PROVIDED IN ACCORDANCE WITH CHAPTER 96 OF THE LOUISVILLE JEFFERSON COUNTY METRO GOVERNMENT ORDINANCES.
9. AN ENCROACHMENT PERMIT AND BOND WILL BE REQUIRED FOR ALL WORK DONE IN THE RIGHT-OF-WAY.
10. RIGHT-OF-WAY DEDICATION SHALL BE RECORDED AS PART OF THE REQUIRED RECORD PLAT.
11. MITIGATION MEASURES FOR DUST CONTROL SHALL BE IN PLACE DURING CONSTRUCTION TO PREVENT FUGITIVE PARTICULATE EMISSIONS FROM REACHING EXISTING ROADS AND NEIGHBORING PROPERTIES.
12. COMPATIBLE USES SHALL BE PLACED IN A COMMON TRENCH UNLESS OTHERWISE REQUIRED BY APPROPRIATE UTILITIES.
13. A KARST SURVEY WAS PERFORMED BY TRAVIS ANDRES, P.E. AND DYLAN DURBIN OF CARDNO ATC ON APRIL 13 AND 23 OF 2015. KARST TERRAIN WAS FOUND AS INDICATED IN THE GEOTECHNICAL REPORT DATED JUNE 4, 2015.
14. THE FINAL DESIGN OF THIS PROJECT SHALL MEET ALL MS4 WATER QUALITY REGULATIONS ESTABLISHED BY MSD. SITE LAYOUT MAY CHANGE AT THE DESIGN PHASE DUE TO PROPER SIZING OF GREEN BEST MANAGEMENT PRACTICES.
15. ONSITE DETENTION WILL BE PROVIDED. POST-DEVELOPED PEAK FLOWS WILL BE LIMITED TO PRE-DEVELOPED PEAK FLOWS FOR THE 2, 10 AND 100-YEAR STORMS OR TO THE CAPACITY OF THE DOWN STREAM SYSTEM, WHICHEVER IS MORE RESTRICTIVE.
16. USACOE APPROVAL REQUIRED PRIOR TO CONSTRUCTION PLAN APPROVAL.
17. A WATERSHED STUDY SHALL BE PROVIDED PRIOR TO MSD CONSTRUCTION PLAN APPROVAL TO VERIFY THERE IS NO INCREASE OF PEAK FLOW RATE LEAVING THE SITE AND NO INCREASE OF DOWNSTREAM WATER SURFACE ELEVATION.
18. KDOW APPROVAL REQUIRED PRIOR TO MSD CONSTRUCTION PLAN APPROVAL.
19. THE EARTHEN DAM FOR THE PROPOSED DETENTION BASIN MAY REQUIRE A DAM BREACH ANALYSIS PRIOR TO MSD CONSTRUCTION PLAN APPROVAL.
20. THE NUMBER OF UNITS CONSTRUCTED CANNOT EXCEED 200 UNTIL BOTH ENTRANCES ARE COMPLETED.
21. THE MINIMUM DRIVEWAY LENGTH IS 25' FROM GARAGE OR BUILDING FACADE TO BACK OF SIDEWALK OR EDGE OF PAVEMENT OR CURB.

SINGLE FAMILY ATTACHED & OPEN SPACE LOT SIZES

ATTACHED UNITS	
PARCEL #	AREA
326	3,200 SF
327	1,800 SF
328	1,800 SF
329	1,800 SF
330	2,070 SF
331	2,070 SF
332	1,800 SF
333	1,800 SF
334	1,800 SF
335	1,800 SF
336	1,800 SF
337	1,800 SF
338	1,800 SF
339	1,800 SF
340	2,070 SF

ATTACHED UNITS	
PARCEL #	AREA
341	2,070 SF
342	1,800 SF
343	1,800 SF
344	1,800 SF
345	1,800 SF
346	3,150 SF
347	3,150 SF
348	1,800 SF
349	1,800 SF
350	1,800 SF
351	1,800 SF
352	1,800 SF
353	1,800 SF
354	1,800 SF
355	1,800 SF

ATTACHED UNITS	
PARCEL #	AREA
356	1,800 SF
357	1,800 SF
358	1,800 SF
359	1,800 SF
360	3,150 SF
361	3,534 SF
362	1,800 SF
363	1,800 SF
364	1,800 SF
365	1,800 SF
366	1,800 SF
367	1,800 SF
368	1,800 SF
369	3,436 SF
370	3,482 SF

ATTACHED UNITS	
PARCEL #	AREA
371	1,800 SF
372	1,800 SF
373	1,800 SF
374	1,800 SF
375	1,800 SF
376	1,800 SF
377	1,800 SF
378	1,800 SF
379	1,800 SF
380	1,800 SF
381	1,800 SF
382	1,800 SF
383	1,800 SF
384	3,615 SF
385	3,536 SF

ATTACHED UNITS	
PARCEL #	AREA
386	1,800 SF
387	1,800 SF
388	1,800 SF
389	1,800 SF
390	1,800 SF
391	1,800 SF
392	1,800 SF
393	1,800 SF
394	1,800 SF
395	1,800 SF
396	1,800 SF
397	2,346 SF
398	2,263 SF
399	2,498 SF
400	2,385 SF

ATTACHED UNITS	
PARCEL #	AREA
401	1,983 SF
402	1,898 SF
403	1,851 SF
404	2,009 SF
405	6,058 SF
OPEN SPACE	
406	900,452 SF
407	674,134 SF
408	90,942 SF
409	59,820 SF
410	18,280 SF
411	28,748 SF
412	63,833 SF
413	14,170 SF
414	8,321 SF
415	8,200 SF

BENCH MARKS (1988 NAVD)

GPS-47 0.5 MILES EAST OF LAGRANGE ROAD GENE SNYDER FREEWAY INTERCHANGE, 160' EAST OF A LARGE SIGN ANNOUNCING "EXIT 30" TO THE DRIVERS COMING FROM THE SOUTH, 60' WEST OF MILE MARKER 30, 30' NORTH OF THE SHOULDER OF THE TWO NORTHERNMOST LANES.
ELEV. 753.39

GPS-47AZ 0.8 MILES SOUTHEAST OF THE GENE SNYDER FREEWAY/LAGRANGE ROAD INTERCHANGE IN A FLAT AREA NOTHEAST OF THE NORTHERNMOST LANDS OF GENE SNYUDER FREEWAY. THE MARK IS 57' NORTHEAST OF THE SHOULDER OF THE TWO LANES BOUND FOR LAGRANGE ROAD FROM THE SOUGHT AND 26' SOUTHWEST OF AN ORANGE STATION MARKER AT THE FENCE LINE BETWEEN THE INTERSTATE AND A "PAR THREE" GOLF COURSE. THE STATION IS ADJACENT TO THE NORTHERN EDGE OF THE GREEN ON HOLE # 3.
ELEV. 744.84

EPSC NOTES:

THE APPROVED EROSION PREVENTION AND SEDIMENT CONTROL (EPSC) PLAN SHALL BE IMPLEMENTED PRIOR TO ANY LAND-DISTURBING ACTIVITY ON THE CONSTRUCTION SITE. ANY MODIFICATIONS TO THE APPROVED EPSC PLAN MUST BE REVIEWED AND APPROVED BY MSD'S PRIVATE DEVELOPMENT REVIEW OFFICE. EPSC BMP'S SHALL BE INSTALLED PER THE PLAN AND MSD STANDARDS.

DETENTION BASINS, IF APPLICABLE, SHALL BE CONSTRUCTED FIRST AND SHALL PERFORM AS SEDIMENT BASINS DURING CONSTRUCTION UNTIL THE CONTRIBUTING DRAINAGE AREAS ARE SEEDED AND STABILIZED. ACTIONS MUST BE TAKEN TO MINIMIZE THE TRACKING OF MUD AND SOIL FROM CONSTRUCTION AREAS ONTO PUBLIC ROADWAYS. SOILS TRACKED ONTO THE ROADWAY SHALL BE REMOVED DAILY.

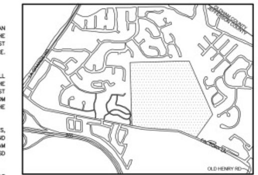
SOIL STOCKPILES SHALL BE LOCATED AWAY FROM STREAMS, PONDS, SWALES, AND CATCH BASINS. STOCKPILES SHALL BE SEEDED, MULCHED, AND ADEQUATELY CONTAINED THROUGH THE USE OF SILT FENCING. ALL STREAM CROSSINGS MUST UTILIZE LOW-WATER CROSSING STRUCTURES PER MSD STANDARD DRAWING ER-02.

WHERE CONSTRUCTION OR LAND DISTURBANCE ACTIVITY WILL OR HAS TEMPORARILY CEASED ON ANY PORTION OF A SITE, TEMPORARY SITE STABILIZATION MEASURES SHALL BE REQUIRED AS SOON AS PRACTICABLE, BUT NO LATER THAN 14 CALENDAR DAYS AFTER THE ACTIVITY HAS CEASED.

SEDIMENT-LADEN GROUNDWATER ENCOUNTERED DURING TRENCHING, BORING OR OTHER EXCAVATION ACTIVITIES SHALL BE PUMPED TO A SEDIMENT TRAPPING DEVICE PRIOR TO BEING DISCHARGE INTO A STREAM, POND, SWALE OR CATCH BASIN.

EPSC PHASING:

1. INSTALL STABILIZED CONSTRUCTION ENTRANCE.
2. INSTALL PERIMETER SILT FENCING.
3. CONSTRUCT DETENTION/SEDIMENT BASIN.
4. BEGIN SITE GRADING.
5. INSTALL DITCH CHECKS AND DIVERSION CHANNELS.
6. CONSTRUCT SANITARY SEWERS.
7. CONSTRUCT STORM DRAINAGE AND INSTALL ASSOCIATED INLET PROTECTION.
8. CONSTRUCT ROADWAYS.
9. ESTABLISH VEGETATION.
10. REMOVE EPSC MEASURES ONCE DISTURBED AREA IS STABILIZED.



KEY MAP
NOT TO SCALE

SITE DATA:

EXISTING ZONING:	R-4
EXISTING FORM DISTRICT:	NEIGHBORHOOD
EXISTING USE:	VACANT
PROPOSED USE:	CONSERVATION SUBDIVISION
GROSS AREA:	122.03 ACS
AREA IN R.O.W.:	19.20 ACS
NET AREA:	102.83 ACS
CONSERVATION AREA:	37.04 ACS
PRIMARY: 18.20 ACS (792,836 SF)	
SECONDARY: 14.69 ACS (640,110 SF)	
50% CREDIT: 361,618 SF @ 50% = 4.15 ACS (180,809 SF)	
PERCENT CONSERVATION AREA:	30%
MAX. LOTS PERMITTED: $\frac{(122.03 - 19.20 - 18.20)*43560}{9,000}$	409 LOTS
PROPOSED BUILDABLE LOTS:	405 LOTS
SINGLE FAMILY DETACHED LOTS: 325 LOTS	
SINGLE FAMILY ATTACHED LOTS: 80 LOTS	
PROPOSED OPEN SPACE LOTS:	10 LOTS
GROSS DENSITY:	3.3 DU/AC
NET DENSITY:	3.9 DU/AC
OPEN SPACE:	42.88 ACS
PERCENT OPEN SPACE:	35%

LOT REQUIREMENTS:

MAX. ATTACHED UNITS ALLOWED:	20%
MAX CONTIGUOUS ATTACHED UNITS:	8
AVERAGE LOT SIZE:	5,500 SF
MIN. SIDE YARD:	3' (0' IF ATTACHED)
MIN. FRONT/STREET SIDE YARD:	15'
MAX. FRONT YARD:	25'
MIN. REAR YARD:	25'
MIN. LOT WIDTH:	25' 40' IF CORNER 18' IF ATTACHED
MAX. BUILDING HEIGHT:	35'
MAX. FAR:	>6,000 SF = .5 <6,000 SF = 1.5

TREE CANOPY REQUIREMENTS:

EXISTING SITE AREA:	5,315,655 SF
EXISTING TREE CANOPY:	3,810,855 SF (72%)
EXISTING TREE CANOPY TO REMAIN:	1,244,805 SF (23%)
TOTAL REQUIRED TREE CANOPY:	797,348 SF (15%)

LEGEND

- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR
- SLOPES
  - 15-20%
  - 20-30%
  - 30% & GREATER
- EXISTING INTERMITTENT STREAMS
- EXISTING PERENINIAL STREAMS
- EXISTING EPHEMERAL STREAMS
- WETLANDS
- CONCEPTUAL STORM SEWER
- CONCEPTUAL SANITARY SEWER
- TREE CANOPY PROTECTION AREA (TCPA)
- PROPOSED EASEMENT
- TEMPORARY CONSTRUCTION ENTRANCE
- PROPOSED SILT FENCE
- PROPOSED ROCK DITCH CHECK
- PROPOSED SWALE

- PRIMARY CONSERVATION AREA (PCA)
- SECONDARY CONSERVATION AREA (SCA)
- SECONDARY CONSERVATION AREA 50% CREDIT (SCA 50%)

CONSERVATION AREA MAP
NOT TO SCALE

GRAPHIC SCALE
0 25 50 100 200

SIGNATURE BLOCK

WM # 11149

SABAK, WILSON & LINGO, INC
ENGINEERS, LANDSCAPE ARCHITECTS & PLANNERS
THE HENRY CLAY 608 S. THIRD STREET, LOUISVILLE, KENTUCKY 40202 (502) 584 - 6271

NO.	REVISION	DATE
1	AGENCY COMMENTS	9/17/15
2	DATA REVISIONS	10/13/15

CASE # 15SUBDIV1003

DEVELOPER
BALL HOMES
3609 WALDEN DRIVE
LEXINGTON, KY 40517

PROPERTY OWNERS
ST JOSEPH CATHOLIC ORPHAN SOCIETY
2823 FRANKFORT AVE
LOUISVILLE, KY 40206
DEED BOOK 8683, PAGE 46

SHEET TITLE: **CONSERVATION SUBDIVISION PLAN**

PROJECT TITLE: **ST. JOSEPH ORPHANAGE SITE**
13605 & 13615 FACTORY LANE, LOUISVILLE, KY
TAX BLOCK 15, LOTS 25 & 80

JOB NO.	2915
SCALE:	1"=100'
DATE:	07/27/15
DRAWING NO:	1

SHEET 1 OF 1

N

PRIMARY CONSERVATION AREA (PCA)

SECONDARY CONSERVATION AREA (SCA)

SECONDARY CONSERVATION AREA 50% CREDIT (SCA 50%)

CONSERVATION AREA MAP

NOT TO SCALE

Tab 8
Photographs of proposed home types

Examples of likely Ball homes

Examples of likely Ball homes

Examples of likely Ball homes

Examples of likely Ball homes

Examples of likely Ball homes

Examples of likely Ball homes

Examples of likely Ball homes

Examples of likely Ball homes

Examples of likely Ball homes

Examples of likely Ball homes

Examples of likely Ball townhomes

Examples of likely Ball townhomes

Tab 9
Traffic Study

St. Joseph Orphanage Site

Ball Homes

Traffic Impact Study

August 5, 2015

Prepared for: Metro Transportation Planning

St. Joseph Orphanage Site

Project no:	C9X22800
Document title:	Traffic Impact Study
Document No.:	
Revision:	<revision>
Date:	August 5, 2015
Client name:	Ball Homes Inc.
Client no:	Prepared for: Metro Transportation Planning
Project manager:	Diane Zimmerman
Author:	Diane Zimmerman
File name:	C:\Users\diane.zimmerman\Documents\Ball Homes\Factory Lane\St. Joe Factory Lane TIS Report.docx

Jacobs Engineering Group Inc.

11940 Highway 42, Suite 1
Goshen, KY 40026
502-228-0393
502-228-0393
www.jacobs.com

Contents

1. Introduction

The subdivision plan for the St. Joseph Orphanage site shows 325 detached lots and 80 attached lots. The site is located on the north side of Factory Lane in Louisville, KY. Access to the subdivision will be through two entrances on Factory Lane. The sole purpose of this study is to examine the traffic operation impacts of the proposed subdivision on the highway network. For this study, the impact area was defined to be the proposed intersections with Factory Lane, and six additional intersections: Factory Lane at La Grange Road (KY 146), Factory Lane at Colonial Springs Drive, Factory Lane at Terrace Springs Drive, Factory Lane at Old Henry Road, Old Henry Road at Arnold Palmer Boulevard, and Old Henry Road at Bush Farm Road. A map of the site is shown in **Figure 1**.

Figure 1 : Location Map

2. Existing Conditions

Factory Lane is a Metro maintained road with an estimated 2015 Average Annual Daily Traffic (AADT) of 6,600 vehicles per day at the proposed entrance, as estimated from the turning movement count. The road is a two-lane highway with ten-foot lanes with a one foot shoulder along the property frontage. The speed limit is 35 mph. There are sidewalks on both sides of Factory Lane from La Grange Road to Terrace Hill Drive.

The intersection of Factory Lane with La Grange Road (KY 146) is controlled with a traffic signal. The Factory Lane approach has a dedicated left turn lane, a shared thru and left lane and a dedicated right turn lane. The signal operates as split phase for Factory Lane and Chamberlain Lane. The signal also has train preemption.

The intersections of Factory Lane with Colonial Springs Road and Terrace Spring Drive are controlled with two-way stop signs. Factory Lane is the primary route. There are dedicated left turn lanes on Factory Lane to Colonial Springs Road and to Terrace Spring Drive. There are no dedicated turn lanes on either Colonial Springs Road or Terrace Spring Drive.

The intersection with Old Henry Road is currently an all-way stop without dedicated turn lanes. Old Henry Road is scheduled for reconstruction beginning in the summer of 2016. The project will add a two-way left turn lane from the Bush Farm Road intersection to Ash Avenue (KY 362) in Oldham County. Old Henry Road will become the primary route (will not stop) and Factory Lane will be controlled with a stop sign. The eastbound Factory Lane approach will have a dedicated left turn lane. The design speed of Old Henry Road is 45 mph. There will be a sidewalk on the southeast side of the road and a multi-use path on the northwest side of the road.

The intersection of Arnold Palmer Boulevard/Hamilton Springs Drive is controlled with a two-way stop sign for the minor streets. The existing eastbound right turn lane on Old Henry Road will be removed. Neither Arnold Palmer Boulevard nor Hamilton Springs Drive have dedicated turn lanes.

The intersection of Old Henry Road with Bush Farm Road is controlled with a traffic signal. Eastbound Old Henry Road has a dedicated left turn lane and a dedicated right turn lane. Westbound Old Henry Road will have a dedicated left turn lane, a thru lane and a shared thru and right turn lane. Bush Farm Road will have dedicated left turn lane and a shared thru and right turn lane in both directions.

Jacobs Engineering Group Inc. obtained a.m. and p.m. peak hour traffic counts at the intersections. The full count data for each intersection are included in Appendix A. **Figure 2** illustrates the existing a.m. and p.m. peak hour traffic volumes for these intersections.

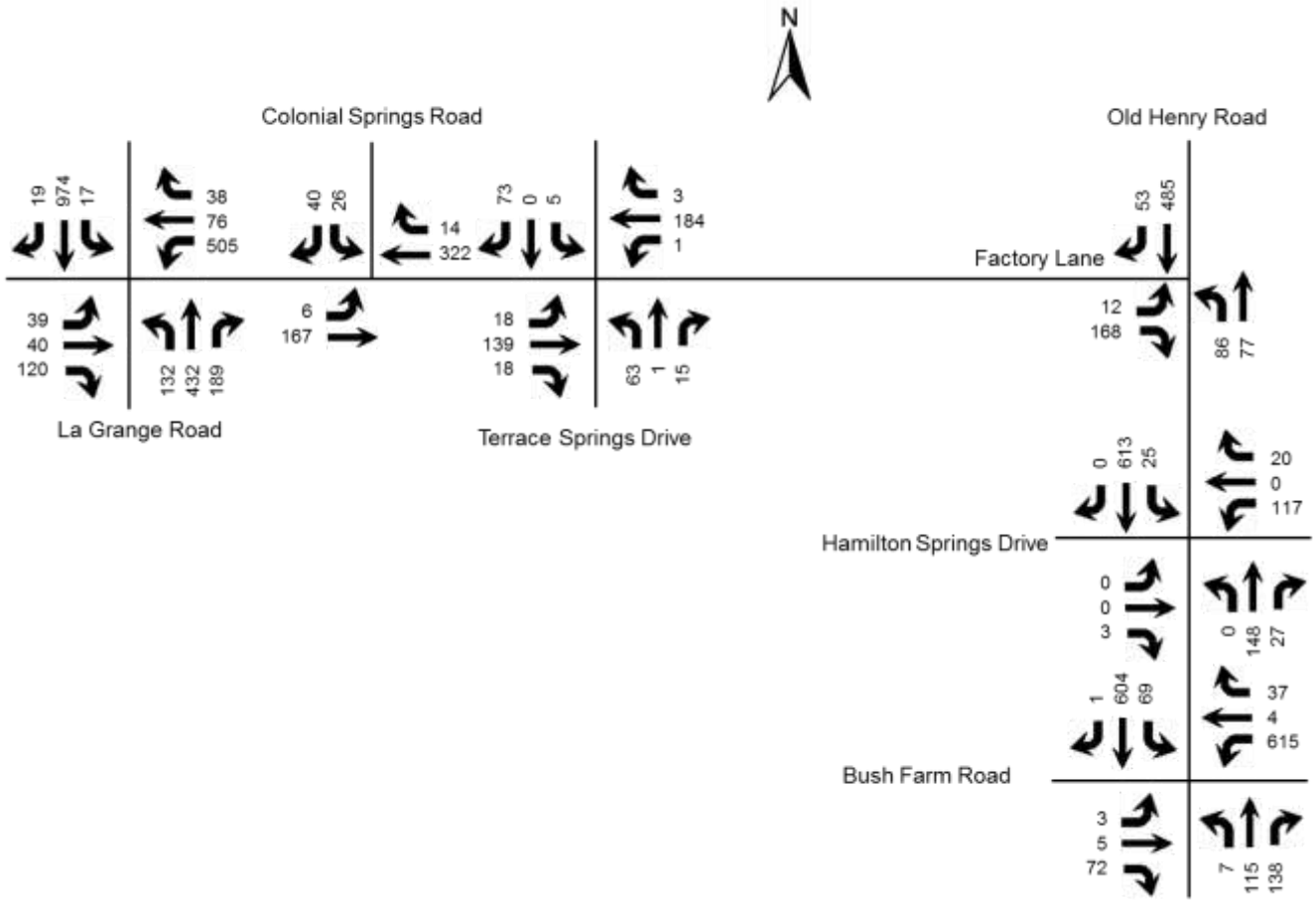


Figure 2 : A.M. Peak Hour Counts

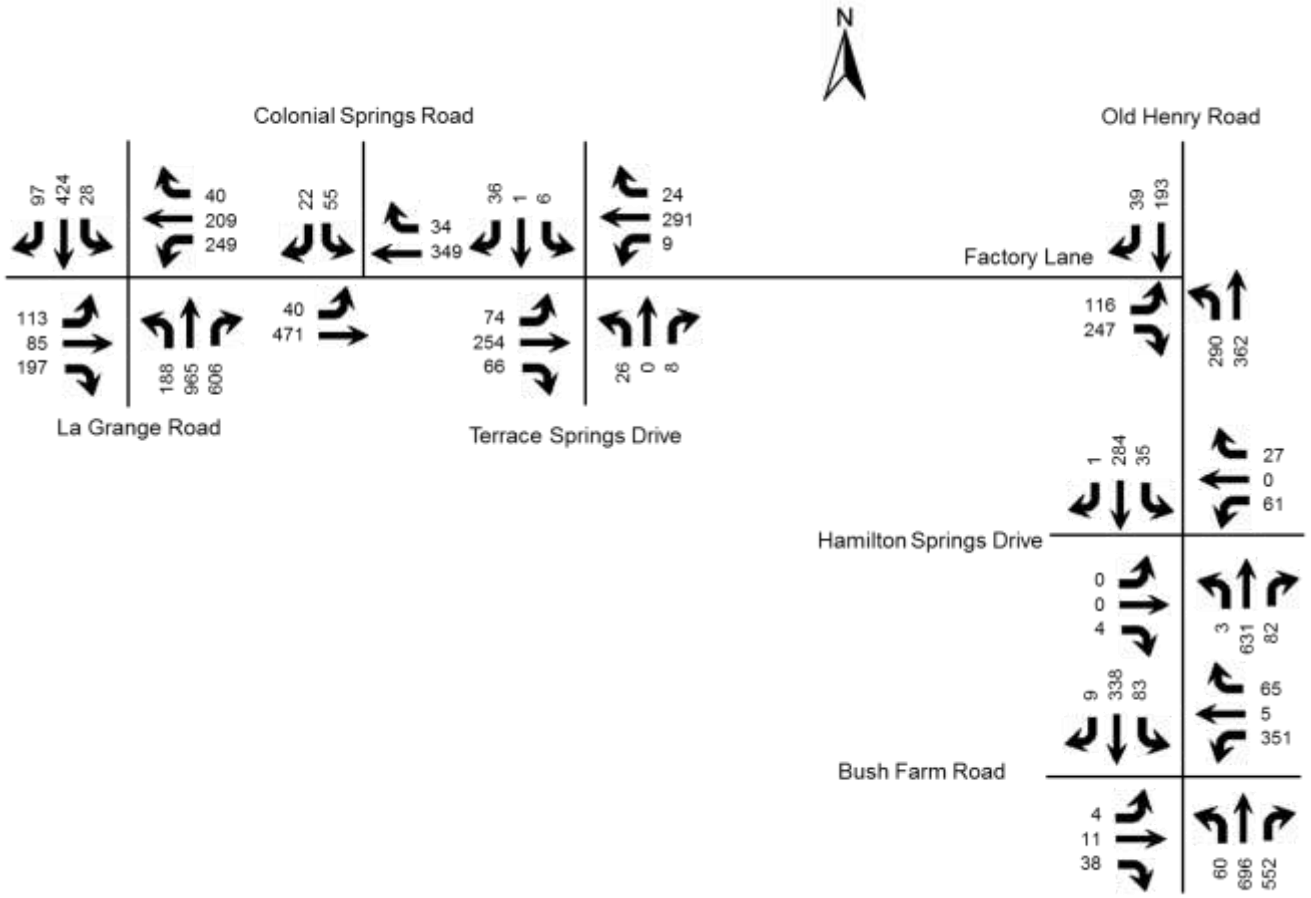


Figure 3 : P.M. Peak Hour Counts

3. Future Conditions

The projected completion year for this development is 2022, so the analysis year for this study is 2022. To predict traffic conditions in 2022, two and one third percent (2.33%) annual growth in traffic was added to Factory Lane and La Grange Road (KY 146). This growth is based upon a review of the traffic forecast for the Old Henry Road Extension dated June 16, 2011. Old Henry Road growth is taken from the forecast. Growth on Hamilton Springs Drive and Bush Farm Road is from the Old Henry Road Traffic Impact Study dated November 2014. **Figures 4 and 5** display the 2022 No Build peak hour volumes.

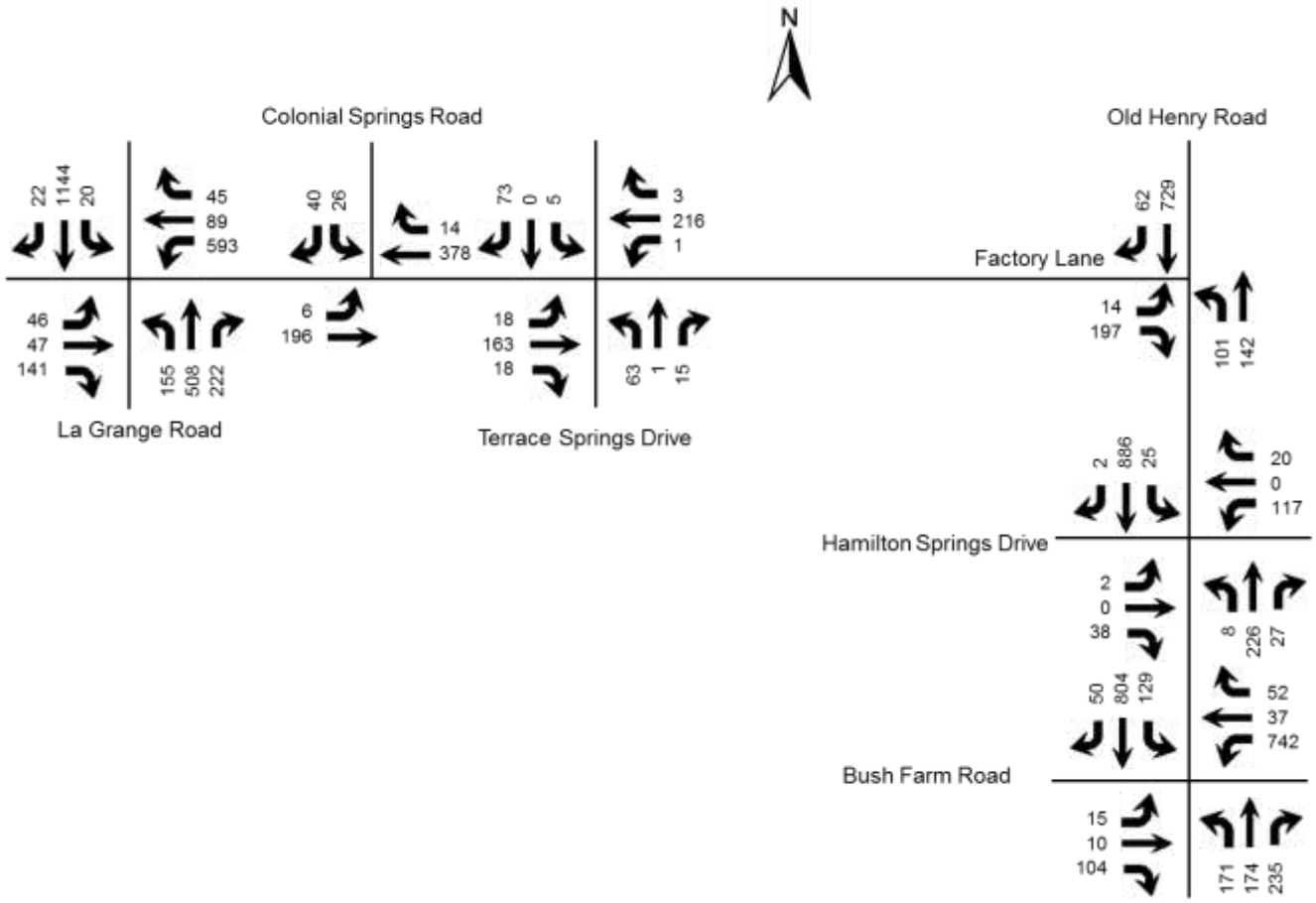


Figure 4 : No Build A.M. Peak Hour Volumes

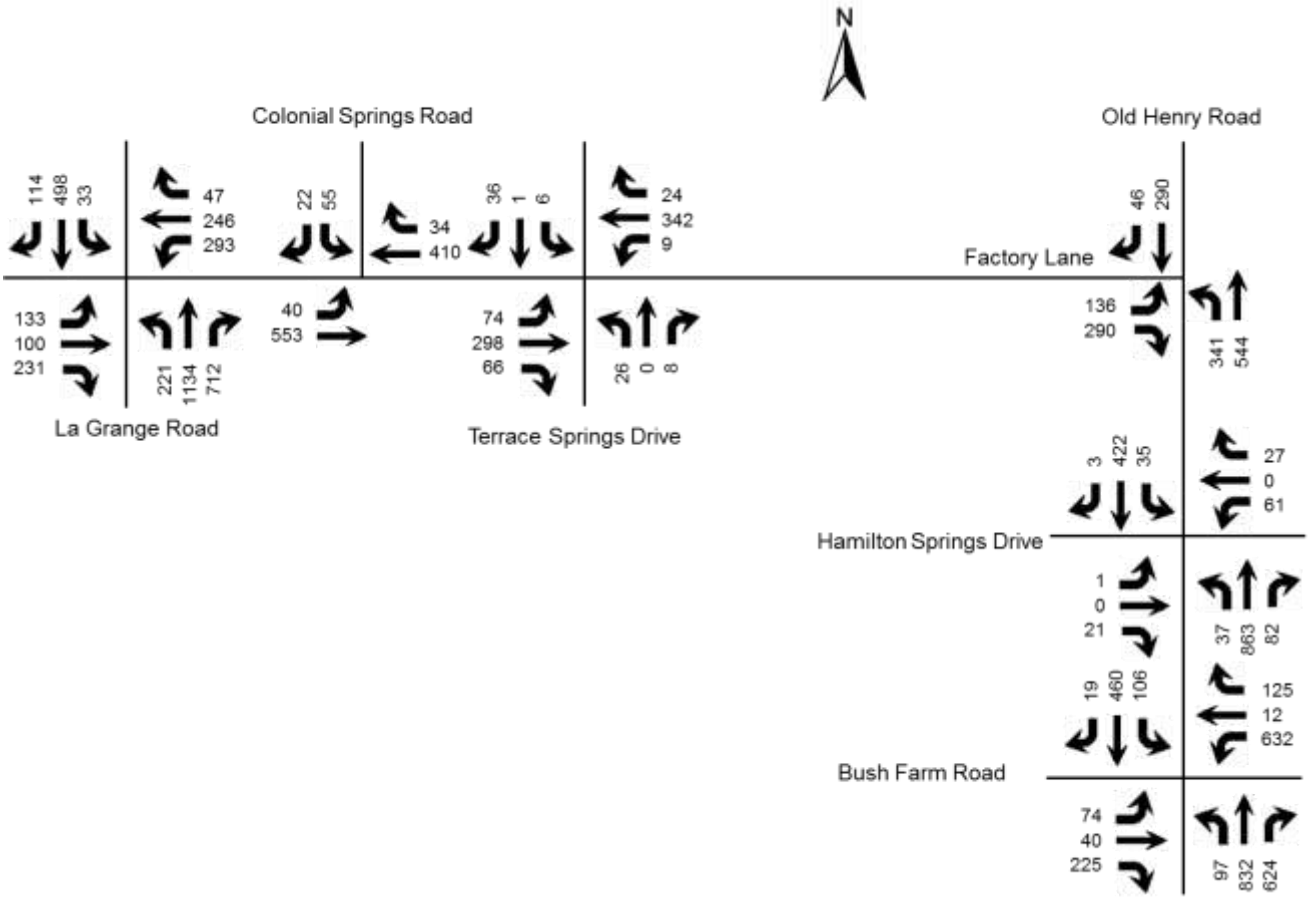


Figure 5 : No Build P.M. Peak Hour Volumes

4. Trip Generation and Distribution

The Institute of Transportation Engineers Trip Generation Manual, 9th Edition contains trip generation rates for a wide range of developments. The land use of "Single-Family Detached Housing (210)" and "Residential Condominium/Townhouse (230)" best describe this development. The trip generation results are listed in **Table 1**. The results of the trip generation analysis are that this additional development will generate 280 a.m. peak hour trips and 354 p.m. peak hour trips. The trips for the development were assigned to the highway network with percentages shown on **Figure 6**. **Figures 7 and 8** show the trips generated by this development and distributed throughout the road network for the year 2022 during the peak hours. **Figures 9 and 10** display the individual turning movements for the year 2022 for the peak hours when the development is completed.

Table 1. Trip Generation Results

	A.M.			P.M.		
	Total Trips	**Entering**	**Exiting**	**Total Trips**	**Entering**	**Exiting**
325 Detached lots (210)	237	59	178	304	192	112
80 Attached lots (230)	43	7	36	50	34	16
Total Peak Hour	280	66	214	354	226	128

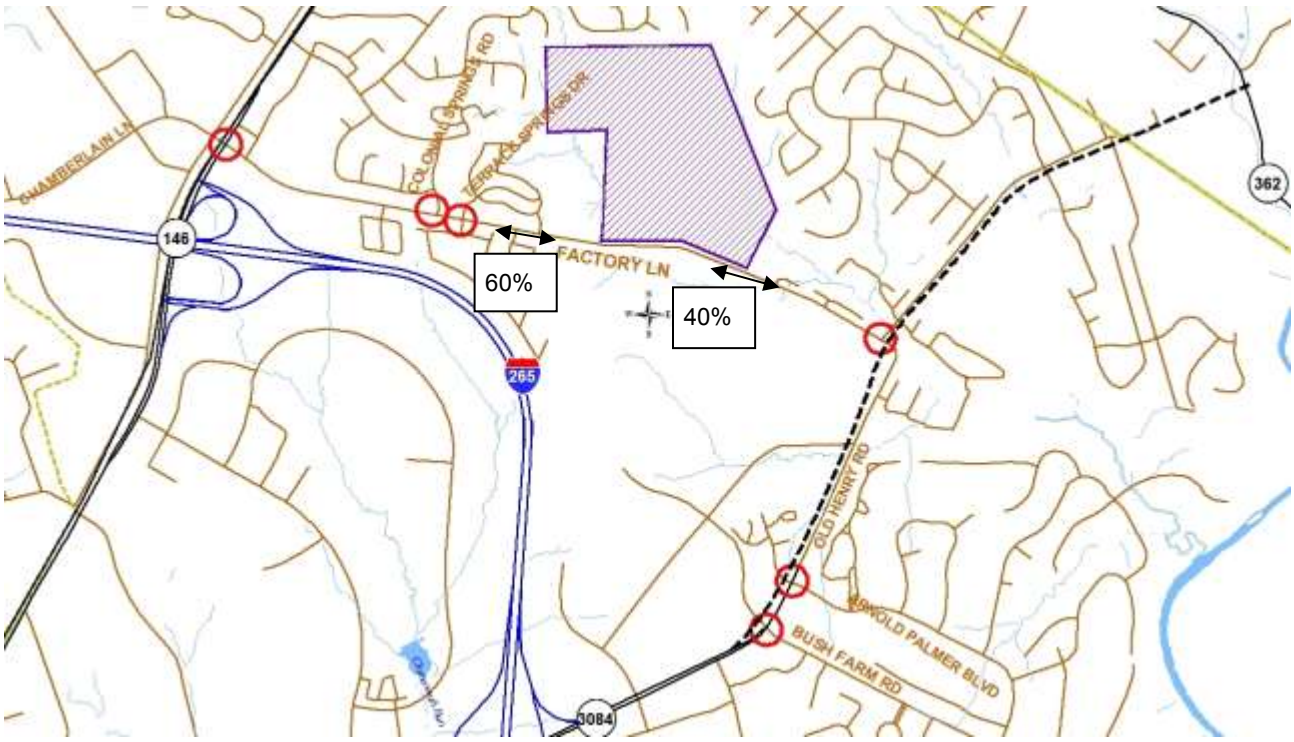


Figure 6 : Site Trip Distribution Percentages

To simplify diagrams, the development is shown with a single access point in Figures 7 through 10. Figure 11 focuses on the turning movements for the entrances. Trip generation for 36 townhouses were assigned to the secondary entrance.

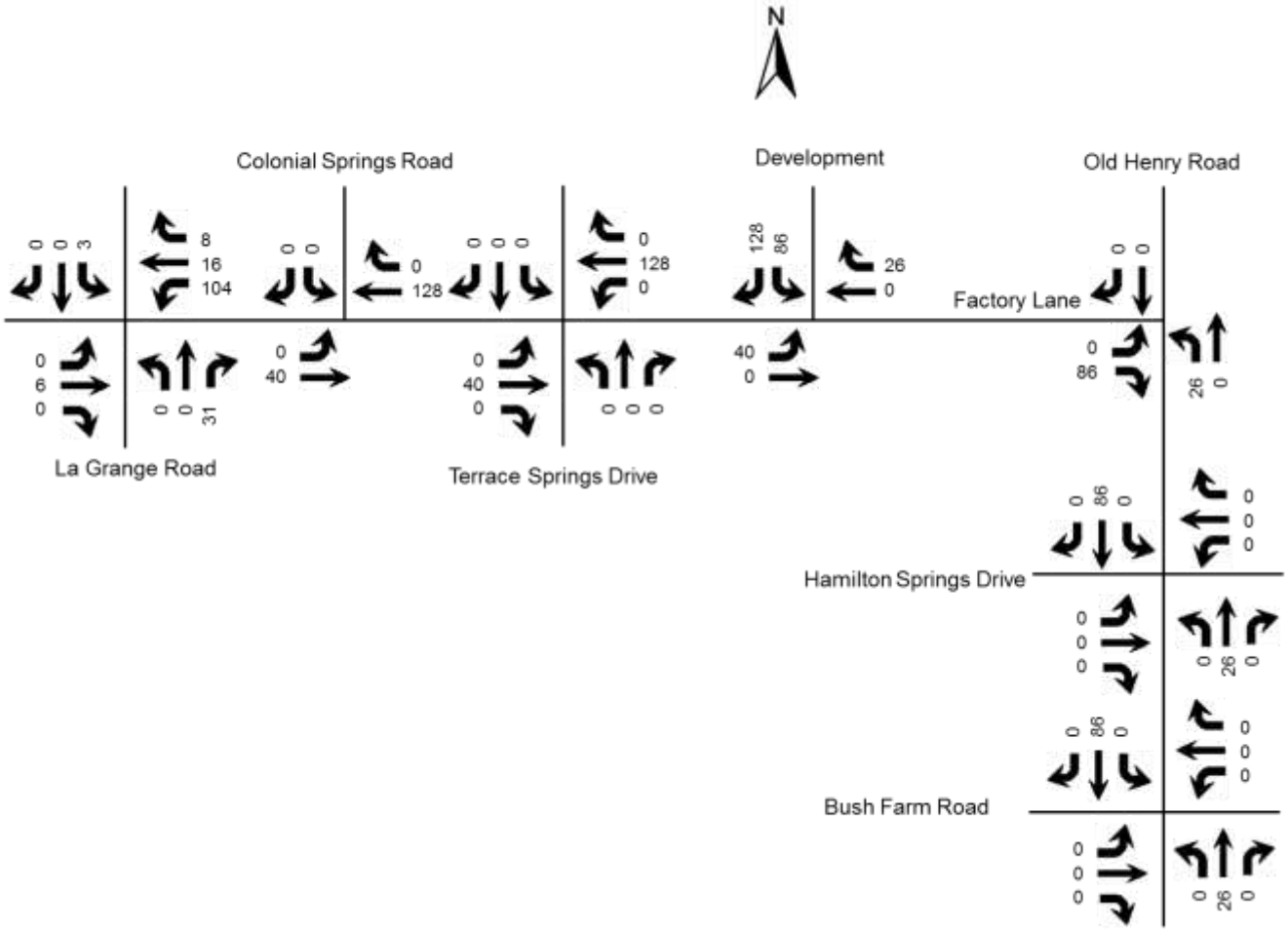


Figure 7 : Site Trip Distribution A.M. Peak Hour Volumes

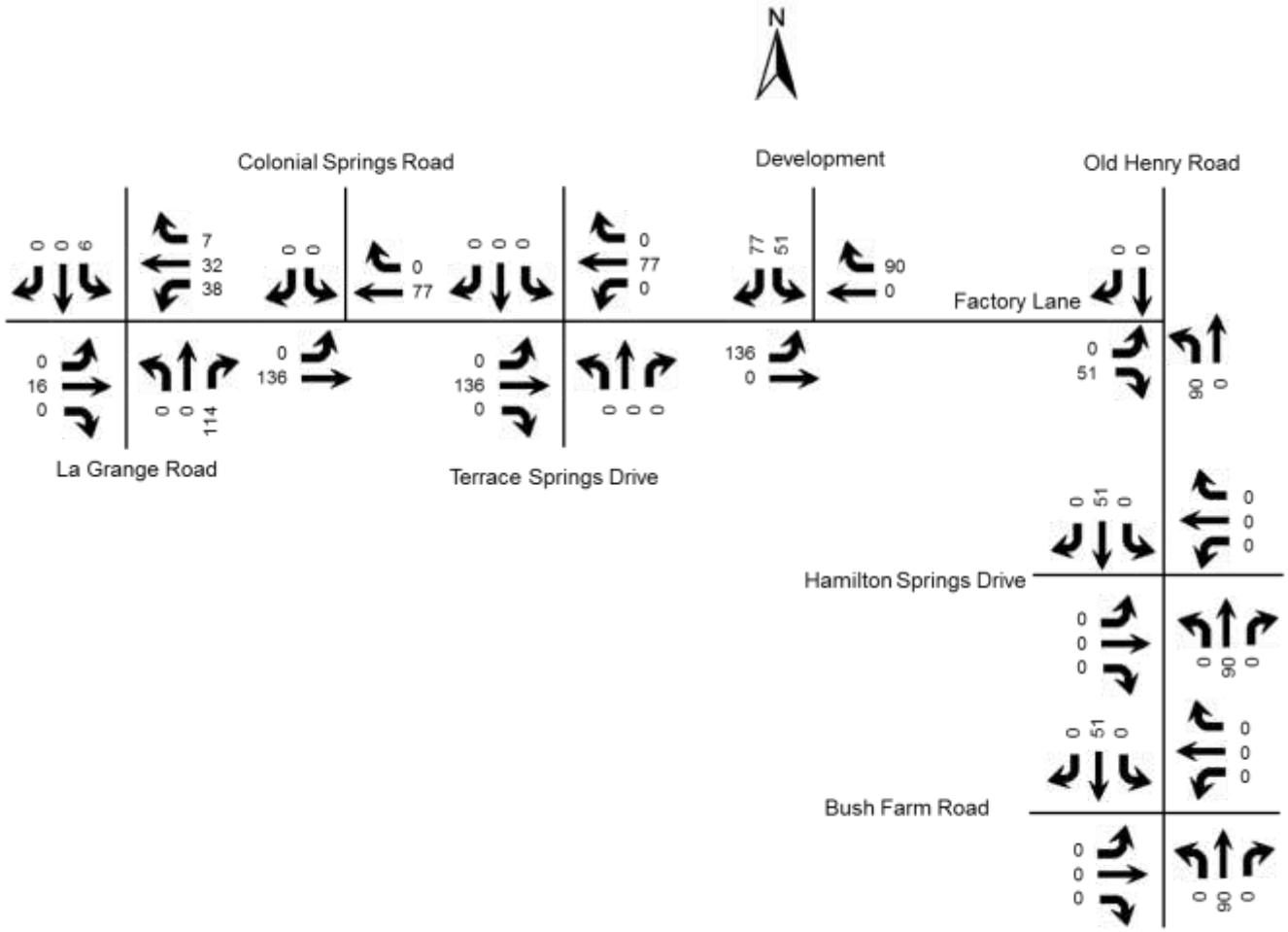


Figure 8 : Site Trip Distribution P.M. Peak Hour Volumes

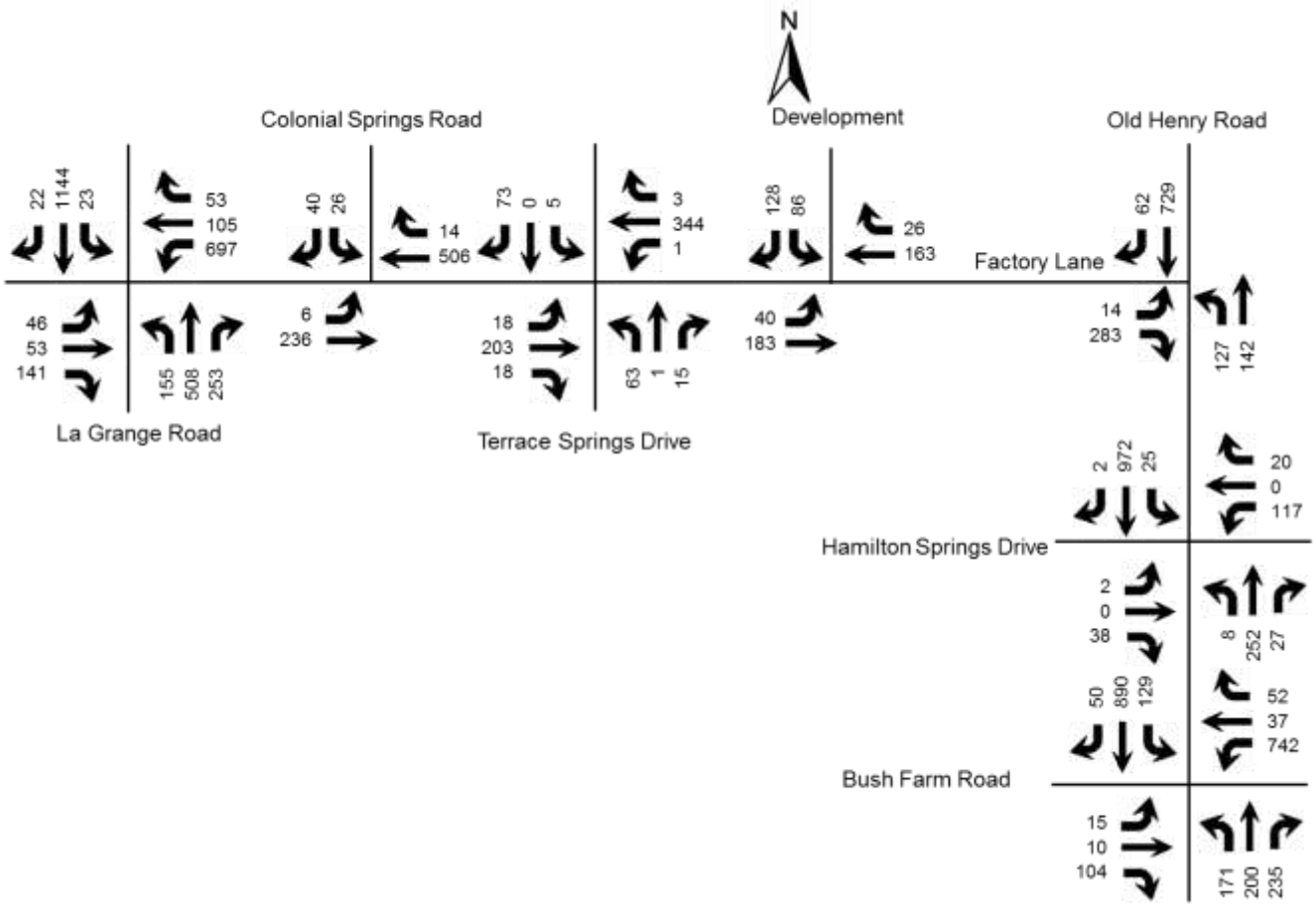


Figure 9 : Build A.M. Peak Hour Volumes

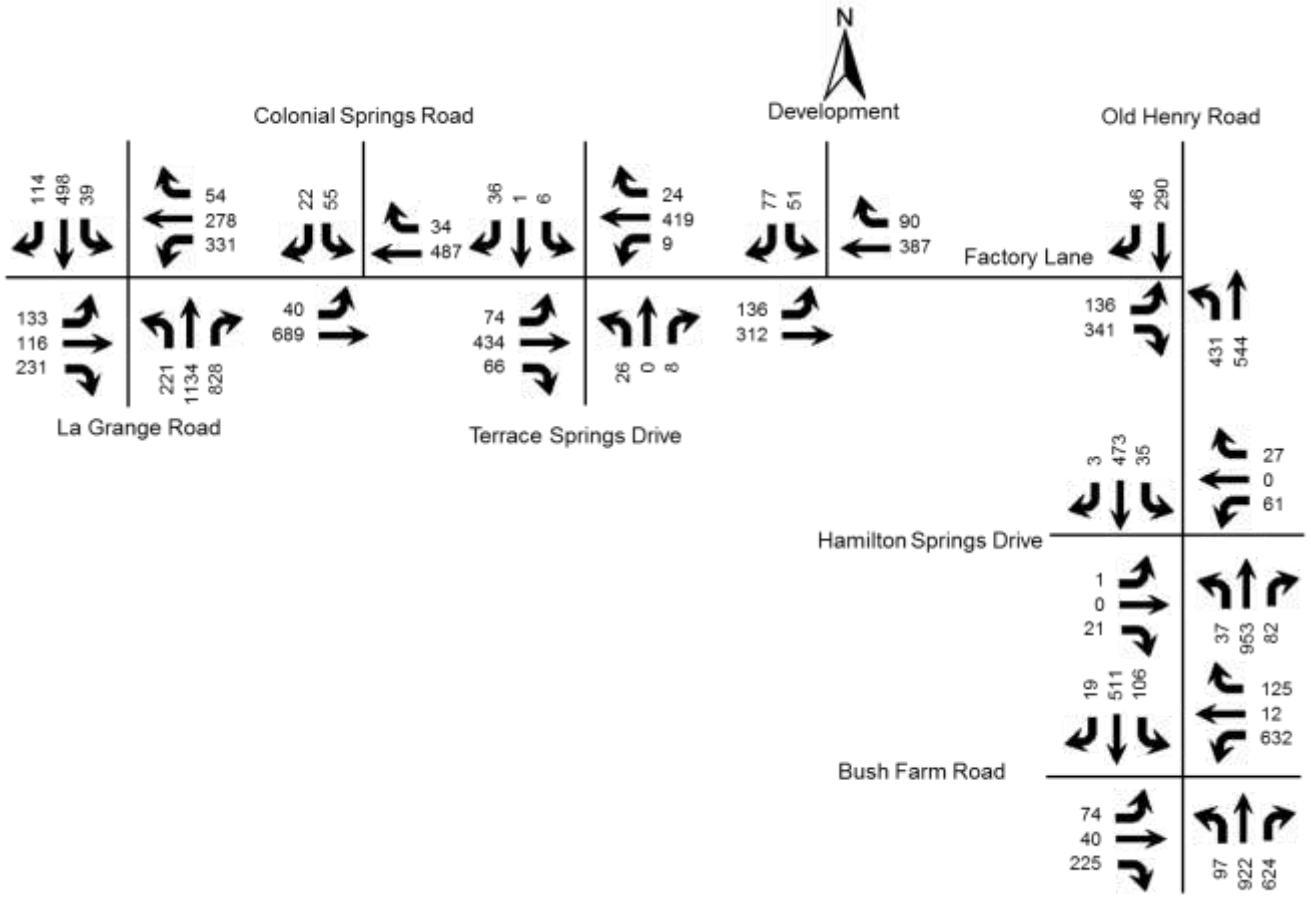


Figure 10 : Build P.M. Peak Hour Volumes

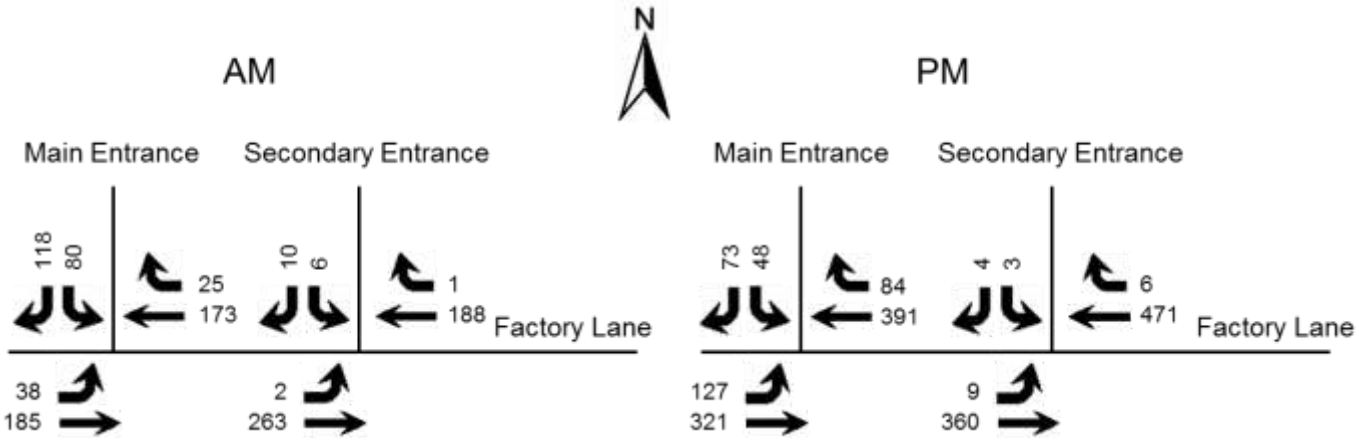


Figure 11 : Build Peak Hour Volumes at the Entrances

5. Analysis

The qualitative measure of operation for a roadway facility or intersection is evaluated by assigning a "Level of Service" or LOS. Level of Service is a ranking scale from A through F with each level representing a range. LOS results depend upon the type of facility that is analyzed. In this case, the LOS is based upon the average vehicle delay each minor movement experiences at an intersection.

To evaluate the impact of the proposed development, the vehicle delays at the intersection were determined using procedures detailed in the Highway Capacity Manual, 2010 edition. Future delay and Level of Service were determined for the intersection using HCS 2010 Streets (version 6.65) and HCS+ (version 5.6) software. **Table 2** shows the results of the analysis for the three scenarios analyzed.

Metro Transportation Planning evaluates the need and length of auxiliary turn lanes using the Kentucky Transportation Cabinet Auxiliary Turn Lane Policy dated 7/20/2009. Using the volumes in **Figure 11**, an eastbound left turn lane is required at the main entrance. A westbound right turn lane is not required. An eastbound left turn lane is included in the results of the analysis in **Table 2**.

Table 2 : Level of Service Summary

	A.M. Peak Hour			P.M. Peak Hour		
Approach	2015	2022 No Build	2022 Build	2015	2022 No Build	2022 Build
La Grange Road at Factory Lane	**D 39.7**	**E 70.5**	**F 102.2**	**C 26.9**	**D 35.4**	**D 46.0**
La Grange Road Northbound	B 16.4	B 16.8	B 16.8	C 23.7	C 29.9	D 40.8
La Grange Road Southbound	C 27.9	C 31.1	C 31.1	C 27.5	C 31.1	C 32.2
Chamberlain Lane Eastbound	C 34.6	D 39.1	D 39.3	D 37.9	D 43.8	D 45.0
Factory Lane Westbound	F 88.8	F 210.4	F 310.3	C 28.5	D 52.8	E 77.6
Factory Lane at Colonial Springs Road						
Factory Lane Eastbound Left Turn	A 8.0	A 8.2	A 8.6	A 8.2	A 8.4	A 8.7
Colonial Springs Road Southbound	B 11.4	B 12.0	B 13.5	B 14.8	B 16.3	C 19.0
Factory Lane at Terrace Springs Drive						
Factory Lane Eastbound Left Turn	A 7.7	A 7.8	A 8.1	A 8.2	A 8.4	A 8.7
Factory Lane Westbound Left Turn	A 7.6	A 7.6	A 7.7	A 8.0	A 8.2	A 8.6
Terrace Springs Drive Northbound	B 11.6	B 12.1	B 13.7	C 15.1	C 16.4	C 19.7
Terrace Springs Drive Southbound	B 12.0	B 12.5	B 14.4	B 11.4	B 12.0	B 13.3

	A.M. Peak Hour			P.M. Peak Hour		
Approach	2015	2022 No Build	2022 Build	2015	2022 No Build	2022 Build
Factory Lane at Main Entrance						
Factory Lane Eastbound Left Turn			A 7.8			A 9.0
Main Entrance Southbound			B 12.4			C 16.8
Factory Lane at Secondary Entrance						
Factory Lane Eastbound Left Turn			A 7.6			A 8.5
Secondary Entrance Southbound			B 10.4			B 14.4
Old Henry Road at Factory Lane	(This intersection currently operates as an all-way stop. The construction project will create Old Henry as the major street.)					
Old Henry Road Northbound Left Turn	B 11.3	B 10.1	B 10.4	C 17.6	A 9.2	A 9.7
Old Henry Road Southbound (currently Westbound)	B 10.5			E 46.2		
Factory Lane Eastbound	C 24.9	C 24.0	E 38.1	B 14.8	E 42.4	F 74.2
Old Henry Road at Hamilton Springs						
Old Henry Road Northbound Left Turn	A 8.7	A 9.8	B 10.2	A 7.9	A 8.3	A 8.5
Old Henry Road Southbound Left Turn	A 7.6	A 7.8	A 7.9	A 9.9	B 12.2	B 13.5
Arnold Palmer Boulevard Westbound	D 25.2	E 38.5	E 49.9	D 32.4	E 44.2	F 64.2
Hamilton Springs Drive Eastbound	B 12.4	C 17.3	C 19.1	A 9.9	B 12.2	B 13.1
Old Henry Road at Bush Farm Road	**C 31.4**	**E 77.2**	**E 76.9**	**C 20.1**	**F 116.5**	**F 124.8**
Old Henry Road Northbound	B 17.8	C 23.3	C 25.3	B 18.6	D 50.4	E 74.7
Old Henry Road Southbound	C 28.4	B 19.1	B 19.8	B 16.4	E 76.5	E 71.9
Bush Farm Road Eastbound	B 13.7	C 21.7	C 22.0	B 19.3	C 21.1	C 21.1
Bush Farm Road Westbound	D 40.8	F 188.2	F 192.7	C 28.6	F 317.3	F 317.3

Key: Level of Service, Delay in seconds per vehicle

6. Conclusion

Based upon the volume of traffic generated by the development and the amount of traffic forecasted for the year 2022, there will be impacts to the existing highway network. At the main entrance to the subdivision a left turn lane will be installed per Metro policy. Turn lanes are not required at the secondary entrance.

This report identifies capacity deficiencies at both signalized intersections in the study area. At the La Grange Road intersection with Factory Lane improvements should be realized with the installation of a signal at the intersection of Springs Station Road. This signal has been requested by the shopping center owner and is currently in the review process at KYTC. This proposed signal could divert as much as 30 percent of the shopping center traffic currently using Factory Lane.

At the Old Henry Road intersection with Bush Farm Road, the capacity deficiency is caused by the traffic forecast from the Old Henry Crossings development to utilize Bush Farm Road (westbound left turn). The proposed development does not add traffic to that movement. Once the proposed traffic signal at Terra Crossings is installed, the traffic volumes on Bush Farm Road should decrease.

Appendix A. Traffic Counts

Study Name LaGrange Rd & Chamberlain Ln
Start Date 02/24/2015
Start Time 7:00 AM

	LaGrange Road Southbound			Factory Lane Westbound			LaGrange Road Northbound				Chamberlain Lane Eastbound		
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	178	3	118	16	8	25	77	33	0	16	3	27
7:15 AM	3	240	2	122	10	7	20	107	39	0	14	7	38
7:30 AM	2	286	5	118	21	12	30	108	50	0	8	5	32
7:45 AM	8	217	4	133	25	10	38	108	58	3	12	18	34
	13	921	14	491	72	37	113	400	180	3	50	33	131
8:00 AM	4	231	8	132	20	9	44	109	42	1	5	10	16
8:15 AM	7	194	11	111	21	8	36	95	47	0	8	10	33
8:30 AM	1	202	9	96	20	2	39	84	50	0	6	14	22
8:45 AM	9	155	11	97	18	13	25	81	55	0	9	15	26
	21	782	39	436	79	32	144	369	194	1	28	49	97
4:00 PM	8	115	10	64	27	12	29	180	113	0	36	35	99
4:15 PM	4	134	17	58	24	18	38	234	141	0	23	28	87
4:30 PM	1	120	12	55	36	8	48	210	142	0	30	38	86
4:45 PM	4	97	24	67	46	10	33	217	138	0	35	24	50
	17	466	63	244	133	48	148	841	534	0	124	125	322
5:00 PM	7	106	19	56	38	12	56	239	156	0	28	20	42
5:15 PM	8	110	24	68	63	7	34	245	170	0	27	19	59
5:30 PM	9	111	30	58	62	11	65	264	142	0	23	22	46
5:45 PM	4	99	15	52	40	15	32	241	134	0	24	23	46
	28	426	88	234	203	45	187	989	602	0	102	84	193

	LaGrange Road Southbound			Factory Lane Westbound			LaGrange Road Northbound				Chamberlain Lane Eastbound		
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	U-Turn	Left	Thru	Right
7:15 AM	3	240	2	122	10	7	20	107	39	0	14	7	38
7:30 AM	2	286	5	118	21	12	30	108	50	0	8	5	32
7:45 AM	8	217	4	133	25	10	38	108	58	3	12	18	34
8:00 AM	4	231	8	132	20	9	44	109	42	1	5	10	16
	17	974	19	505	76	38	132	432	189	4	39	40	120

4:45 PM	4	97	24	67	46	10	33	217	138	0	35	24	50
5:00 PM	7	106	19	56	38	12	56	239	156	0	28	20	42
5:15 PM	8	110	24	68	63	7	34	245	170	0	27	19	59
5:30 PM	9	111	30	58	62	11	65	264	142	0	23	22	46
	28	424	97	249	209	40	188	965	606	0	113	85	197

JACOBS
11940 Highway 42, Suite 1
Goshen, KY 40026

Counted by: Andy Wolak

File Name : ColonialSpringsAM
Site Code : 00512151
Start Date : 5/12/2015
Page No : 1

Groups Printed- Unshifted

	Colonial Springs Rd From North				Factory Lane From East				From South				Factory Lane From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	7	0	7	14	0	62	1	63	0	0	0	0	0	23	0	23	100
07:15 AM	9	0	11	20	0	75	0	75	0	0	0	0	0	22	0	22	117
07:30 AM	7	0	14	21	0	85	3	88	0	0	0	0	1	38	0	39	148
07:45 AM	13	0	9	22	0	90	4	94	0	0	0	0	3	39	0	42	158
Total	36	0	41	77	0	312	8	320	0	0	0	0	4	122	0	126	523
08:00 AM	4	0	9	13	0	79	4	83	0	0	0	0	2	50	0	52	148
08:15 AM	2	0	8	10	0	68	3	71	0	0	0	0	0	40	0	40	121
08:30 AM	5	0	4	9	0	69	3	72	0	0	0	0	3	31	0	34	115
08:45 AM	4	0	9	13	0	53	3	56	0	0	0	0	2	30	0	32	101
Total	15	0	30	45	0	269	13	282	0	0	0	0	7	151	0	158	485
Grand Total	51	0	71	122	0	581	21	602	0	0	0	0	11	273	0	284	1008
Apprch %	41.8	0	58.2		0	96.5	3.5		0	0	0		3.9	96.1	0		
Total %	5.1	0	7	12.1	0	57.6	2.1	59.7	0	0	0	0	1.1	27.1	0	28.2	

	Colonial Springs Rd From North				Factory Lane From East				From South				Factory Lane From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	7	0	**14**	21	0	85	3	88	0	0	0	0	1	38	0	39	148
07:45 AM	**13**	0	9	**22**	0	**90**	**4**	**94**	0	0	0	0	**3**	39	0	42	**158**
08:00 AM	4	0	9	13	0	79	4	83	0	0	0	0	2	**50**	0	**52**	148
08:15 AM	2	0	8	10	0	68	3	71	0	0	0	0	0	40	0	40	121
Total Volume	26	0	40	66	0	322	14	336	0	0	0	0	6	167	0	173	575
% App. Total	39.4	0	60.6		0	95.8	4.2		0	0	0		3.5	96.5	0		
PHF	500	000	714	750	000	894	875	894	000	000	000	000	500	835	000	832	910

Groups Printed- Unshifted

	Colonial Springs Rd From North				Factory Lane From East				From South				Factory Lane From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	12	0	4	16	0	59	5	64	0	0	0	0	6	73	0	79	159
04:15 PM	6	0	5	11	0	61	5	66	0	0	0	0	3	109	0	112	189
04:30 PM	8	0	4	12	0	79	5	84	0	0	0	0	8	132	0	140	236
04:45 PM	18	0	4	22	0	82	6	88	0	0	0	0	3	94	0	97	207
Total	44	0	17	61	0	281	21	302	0	0	0	0	20	408	0	428	791
05:00 PM	17	0	5	22	0	90	11	101	0	0	0	0	11	125	0	136	259
05:15 PM	17	0	6	23	0	93	8	101	0	0	0	0	8	125	0	133	257
05:30 PM	10	0	4	14	0	84	9	93	0	0	0	0	6	94	0	100	207
05:45 PM	11	0	7	18	0	82	6	88	0	0	0	0	15	127	0	142	248
Total	55	0	22	77	0	349	34	383	0	0	0	0	40	471	0	511	971
Grand Total	99	0	39	138	0	630	55	685	0	0	0	0	60	879	0	939	1762
Apprch %	71.7	0	28.3		0	92	8		0	0	0		6.4	93.6	0		
Total %	5.6	0	2.2	7.8	0	35.8	3.1	38.9	0	0	0	0	3.4	49.9	0	53.3	

	Colonial Springs Rd From North				Factory Lane From East				From South				Factory Lane From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**17**	0	5	22	0	90	**11**	**101**	0	0	0	0	11	125	0	136	**259**
05:15 PM	17	0	6	**23**	0	**93**	8	101	0	0	0	0	8	125	0	133	257
05:30 PM	10	0	4	14	0	84	9	93	0	0	0	0	6	94	0	100	207
05:45 PM	11	0	**7**	18	0	82	6	88	0	0	0	0	**15**	**127**	0	**142**	248
Total Volume	55	0	22	77	0	349	34	383	0	0	0	0	40	471	0	511	971
% App. Total	71.4	0	28.6		0	91.1	8.9		0	0	0		7.8	92.2	0		
PHF	809	000	786	837	000	938	773	948	000	000	000	000	667	927	000	900	937

JACOBS
11940 Highway 42, Suite 1
Goshen, KY 40026

Counted by: Andy Wolak

File Name : FactoryLnAM rot
Site Code : 00022515
Start Date : 2/25/2015
Page No : 1

Groups Printed- Unshifted

	Terrace Springs Drive From North				Factory Lane From East				Terrace Springs Drive From South				Factory Lane From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	4	0	13	17	1	40	1	42	26	0	0	26	1	22	1	24	109
07:15 AM	3	0	18	21	0	31	0	31	15	1	0	16	4	18	5	27	95
07:30 AM	1	0	21	22	0	41	0	41	16	0	2	18	2	23	3	28	109
07:45 AM	3	0	19	22	0	50	0	50	18	1	3	22	6	42	5	53	147
Total	11	0	71	82	1	162	1	164	75	2	5	82	13	105	14	132	460
08:00 AM	1	0	13	14	1	53	2	56	13	0	3	16	4	42	5	51	137
08:15 AM	0	0	20	20	0	40	1	41	16	0	7	23	6	32	5	43	127
08:30 AM	1	0	16	17	0	30	2	32	15	0	3	18	4	30	2	36	103
08:45 AM	1	0	9	10	2	35	0	37	7	0	1	8	5	33	5	43	98
Total	3	0	58	61	3	158	5	166	51	0	14	65	19	137	17	173	465
Grand Total	14	0	129	143	4	320	6	330	126	2	19	147	32	242	31	305	925
Apprch %	9.8	0	90.2		1.2	97	1.8		85.7	1.4	12.9		10.5	79.3	10.2		
Total %	1.5	0	13.9	15.5	0.4	34.6	0.6	35.7	13.6	0.2	2.1	15.9	3.5	26.2	3.4	33	

	Terrace Springs Drive From North				Factory Lane From East				Terrace Springs Drive From South				Factory Lane From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	1	0	**21**	**22**	0	41	0	41	16	0	2	18	2	23	3	28	109
07:45 AM	**3**	0	19	22	0	50	0	50	**18**	**1**	3	22	**6**	**42**	**5**	**53**	**147**
08:00 AM	1	0	13	14	**1**	**53**	**2**	**56**	13	0	3	16	4	42	5	51	137
08:15 AM	0	0	20	20	0	40	1	41	16	0	**7**	**23**	6	32	5	43	127
Total Volume	5	0	73	78	1	184	3	188	63	1	15	79	18	139	18	175	520
% App. Total	6.4	0	93.6		0.5	97.9	1.6		79.7	1.3	19		10.3	79.4	10.3		
PHF	.417	.000	.869	.886	.250	.868	.375	.839	.875	.250	.536	.859	.750	.827	.900	.825	.884

Counted by: Andy Wolak

File Name : FactoryLnPM rot
Site Code : 00022415
Start Date : 2/24/2015
Page No : 1

Groups Printed- Unshifted

	Terrace Springs Drive From North				Factory Lane From East				Terrace Springs Drive From South				Factory Lane From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	1	0	6	7	2	44	3	49	11	0	1	12	17	54	12	83	151
04:15 PM	5	0	11	16	0	50	0	50	5	0	0	5	14	74	21	109	180
04:30 PM	1	0	7	8	1	37	4	42	6	0	1	7	20	65	11	96	153
04:45 PM	0	0	10	10	3	52	0	55	7	1	3	11	20	52	18	90	166
Total	7	0	34	41	6	183	7	196	29	1	5	35	71	245	62	378	650
05:00 PM	1	0	4	5	0	67	5	72	9	0	2	11	8	52	15	75	163
05:15 PM	3	1	13	17	4	75	8	87	6	0	1	7	26	72	16	114	225
05:30 PM	1	0	9	10	3	93	7	103	5	0	1	6	17	66	23	106	225
05:45 PM	1	0	10	11	2	56	4	62	6	0	4	10	23	64	12	99	182
Total	6	1	36	43	9	291	24	324	26	0	8	34	74	254	66	394	795
Grand Total	13	1	70	84	15	474	31	520	55	1	13	69	145	499	128	772	1445
Apprch %	15.5	1.2	83.3		2.9	91.2	6		79.7	1.4	18.8		18.8	64.6	16.6		
Total %	0.9	0.1	4.8	5.8	1	32.8	2.1	36	3.8	0.1	0.9	4.8	10	34.5	8.9	53.4	

	Terrace Springs Drive From North				Factory Lane From East				Terrace Springs Drive From South				Factory Lane From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	1	0	4	5	0	67	5	72	**9**	0	2	**11**	8	52	15	75	163
05:15 PM	**3**	**1**	**13**	**17**	**4**	75	**8**	87	6	0	1	7	**26**	**72**	16	**114**	**225**
05:30 PM	1	0	9	10	3	**93**	7	**103**	5	0	1	6	17	66	**23**	106	225
05:45 PM	1	0	10	11	2	56	4	62	6	0	**4**	10	23	64	12	99	182
Total Volume	6	1	36	43	9	291	24	324	26	0	8	34	74	254	66	394	795
% App. Total	14	2.3	83.7		2.8	89.8	7.4		76.5	0	23.5		18.8	64.5	16.8		
PHF	.500	.250	.692	.632	.563	.782	.750	.786	.722	.000	.500	.773	.712	.882	.717	.864	.883

JACOBS
11940 Highway 42, Suite 1
Goshen, KY 40026

Counted by: Andy Wolak

File Name : FactoryLnOldHenryAM
Site Code : 05121522
Start Date : 5/13/2015
Page No : 1

Groups Printed- Unshifted

	Old Henry Road From North					Old Henry Road From East					From South					Factory Lane From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	122	0	8	0	130	0	18	10	0	28	0	0	0	0	0	3	27	0	0	30	188
07:15 AM	135	0	17	0	152	0	10	20	0	30	0	0	0	0	0	1	48	0	0	49	231
07:30 AM	133	0	13	0	146	0	19	16	0	35	0	0	0	0	0	4	36	0	0	40	221
07:45 AM	105	0	12	0	117	0	39	16	0	55	0	0	0	0	0	5	42	0	0	47	219
Total	495	0	50	0	545	0	84	62	0	146	0	0	0	0	0	13	153	0	0	166	857
08:00 AM	112	0	11	0	123	0	18	25	0	43	0	0	0	0	0	2	42	0	0	44	210
08:15 AM	90	0	10	0	100	0	23	16	0	39	0	0	0	0	0	5	44	0	0	49	188
08:30 AM	84	0	13	0	97	0	14	23	0	37	0	0	0	0	0	4	31	0	0	35	169
08:45 AM	84	0	14	0	98	0	21	23	0	44	0	0	0	0	0	4	39	0	0	43	185
Total	370	0	48	0	418	0	76	87	0	163	0	0	0	0	0	15	156	0	0	171	752
Grand Total	865	0	98	0	963	0	160	149	0	309	0	0	0	0	0	28	309	0	0	337	1609
Apprch %	89.8	0	10.2	0		0	51.8	48.2	0		0	0	0	0		8.3	91.7	0	0		
Total %	53.8	0	6.1	0	59.9	0	9.9	9.3	0	19.2	0	0	0	0	0	1.7	19.2	0	0	20.9	

	Old Henry Road From North					Old Henry Road From East					From South					Factory Lane From West					
Start Time	Left	Thru	Right	Peds	App. Total																
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	**135**	0	**17**	0	**152**	0	10	20	0	30	0	0	0	0	0	1	**48**	0	0	**49**	**231**
07:30 AM	133	0	13	0	146	0	19	16	0	35	0	0	0	0	0	4	36	0	0	40	221
07:45 AM	105	0	12	0	117	0	**39**	16	0	**55**	0	0	0	0	0	**5**	42	0	0	47	219
08:00 AM	112	0	11	0	123	0	18	**25**	0	43	0	0	0	0	0	2	42	0	0	44	210
Total Volume	485	0	53	0	538	0	86	77	0	163	0	0	0	0	0	12	168	0	0	180	881
% App. Total	90.1	0	9.9	0		0	52.8	47.2	0		0	0	0	0		6.7	93.3	0	0		
PHF	.898	.000	.779	.000	.885	.000	.551	.770	.000	.741	.000	.000	.000	.000	.000	.600	.875	.000	.000	.918	953

Counted by: Andy Wolak

File Name : FactoryLnOldHenryPM
Site Code : 05111511
Start Date : 5/12/2015
Page No : 1

Groups Printed- Unshifted

	Old Henry Road From North					Old Henry Road From East					From South					Factory Lane From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	46	0	6	0	52	0	50	86	0	136	0	0	0	0	0	30	55	0	0	85	279
04:15 PM	55	0	7	0	62	0	84	91	0	175	0	0	0	0	0	28	61	0	0	89	326
04:30 PM	34	0	9	0	43	0	85	100	0	185	0	0	0	0	0	25	65	0	0	90	318
04:45 PM	58	0	11	0	69	0	71	85	0	156	0	0	0	0	0	33	66	0	0	99	324
Total	193	0	39	0	232	0	290	362	0	652	0	0	0	0	0	116	247	0	0	363	1247
Grand Total	380	0	78	0	456	0	438	659	0	1097	0	0	0	0	0	186	428	0	0	614	2167
Apprch %	83.3	0	16.7	0		0	39.9	60.1	0		0	0	0	0		30.3	69.7	0	0		
Total %	17.5	0	3.6	0	21	0	20.2	30.4	0	50.6	0	0	0	0	0	8.6	19.8	0	0	28.3	

	Old Henry Road From North					Old Henry Road From East					From South					Factory Lane From West					
Start Time	Left	Thru	Right	Peds	App. Total																
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	46	0	**12**	0	58	0	50	86	0	136	0	0	0	0	0	30	55	0	0	85	279
05:15 PM	55	0	7	0	62	0	84	91	0	175	0	0	0	0	0	28	61	0	0	89	**326**
05:30 PM	34	0	9	0	43	0	**85**	**100**	0	**185**	0	0	0	0	0	25	65	0	0	90	318
05:45 PM	**58**	0	11	0	**69**	0	71	85	0	156	0	0	0	0	0	**33**	**66**	0	0	**99**	324
Total Volume	193	0	39	0	232	0	290	362	0	652	0	0	0	0	0	116	247	0	0	363	1247
% App. Total	83.2	0	16.8	0		0	44.5	55.5	0		0	0	0	0		32	68	0	0		
PHF	.832	.000	.813	.000	.841	.000	.853	.905	.000	.881	.000	.000	.000	.000	.000	.879	.936	.000	.000	.917	.956

TABLE 8
WEEKDAY PEAK HOUR COUNTS
Old Henry Road @ Arnold Palmer Boulevard/Hamilton Springs Drive
Old Henry Crossing Traffic Study

Nov-14	Old Henry Parkway						Arnold Palmer Blvd			Hamilton Springs Dr			Totals	
Time Interval	EB Left	EB Through	EB Right	WB Left	WB Through	WB Right	NB Left	NB Through	NB Right	SB Left	SB Through	SB Right	Quarter Hour	Hourly
7:00-7:15 AM	0	13	1	2	160	0	29	0	2	0	0	0	207	---
7:15-7:30 AM	0	18	4	8	186	0	25	0	3	0	0	0	244	---
7:30-7:45 AM	0	45	5	3	147	0	34	0	7	0	0	1	242	---
7:45-8:00 AM	0	39	6	8	149	0	29	0	6	0	0	2	239	932
8:00-8:15 AM	0	46	12	6	131	0	29	0	4	0	0	0	228	953
8:15-8:30 AM	1	36	10	3	109	0	17	0	3	0	0	2	181	890
8:30-8:45 AM	0	19	13	3	125	0	22	0	3	0	0	0	185	833
8:45-9:00 AM	1	39	12	5	101	0	26	0	11	1	0	0	196	790
TOTAL	2	255	63	38	1108	0	211	0	39	1	0	5	1722	---
2014 A.M. PEAK HR	**0**	**148**	**27**	**25**	**613**	**0**	**117**	**0**	**20**	**0**	**0**	**3**		
2016 A.M. PEAK HR	**0**	**154**	**28**	**26**	**638**	**0**	**122**	**0**	**21**	**0**	**0**	**3**		
2018 A.M. PEAK HR	**0**	**160**	**29**	**27**	**664**	**0**	**127**	**0**	**22**	**0**	**0**	**3**		
4:00-4:15 AM	0	88	17	9	61	0	18	1	3	0	0	2	199	---
4:15-4:30 AM	1	114	16	3	59	0	18	0	3	1	0	0	215	---
4:30-4:45 AM	0	90	32	6	77	0	19	0	4	0	0	0	228	---
4:45-5:00 AM	1	140	17	8	74	0	11	0	10	0	0	1	262	904
5:00-5:15 AM	1	179	20	9	67	0	17	0	10	0	0	1	304	1009
5:15-5:30 AM	1	163	23	9	80	1	15	0	5	0	0	1	298	1092
5:30-5:45 AM	0	149	22	9	63	0	18	0	2	0	0	1	264	1128
5:45-6:00 AM	1	137	18	3	67	0	17	0	9	0	0	0	252	1118
TOTAL	5	1060	165	56	548	1	133	1	46	1	0	6	2022	---
2014 P.M. PEAK HR	**3**	**631**	**82**	**35**	**284**	**1**	**61**	**0**	**27**	**0**	**0**	**4**		
2016 P.M. PEAK HR	**3**	**656**	**85**	**36**	**295**	**1**	**63**	**0**	**28**	**0**	**0**	**4**		
2018 P.M. PEAK HR	**3**	**683**	**89**	**38**	**307**	**1**	**66**	**0**	**29**	**0**	**0**	**4**		

JACOBS
11940 Highway 42, Suite 1
Goshen, KY 40026

Counted by: Andy Wolak

File Name : OldHenryBushFarmAM
Site Code : 00062151
Start Date : 6/2/2015
Page No : 1

Groups Printed- Unshifted

	Old Henry Road From North				Bush Farm Road From East				Old Henry Road From South				Bush Farm Road From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	10	142	0	152	121	0	5	126	2	16	16	34	0	1	10	11	323
07:15 AM	8	169	1	178	119	0	9	128	2	12	36	50	0	0	9	9	365
07:30 AM	8	150	0	158	155	0	12	167	2	33	34	69	0	3	19	22	416
07:45 AM	14	158	0	172	161	1	9	171	1	20	42	63	2	1	14	17	423
Total	40	619	1	660	556	1	35	592	7	81	128	216	2	5	52	59	1527
08:00 AM	24	147	1	172	153	2	11	166	2	34	29	65	1	1	16	18	421
08:15 AM	23	149	0	172	146	1	5	152	2	28	33	63	0	0	23	23	410
08:30 AM	14	139	0	153	127	0	7	134	3	25	62	90	0	2	12	14	391
08:45 AM	46	126	2	174	149	1	13	163	4	31	74	109	1	3	11	15	461
Total	107	561	3	671	575	4	36	615	11	118	198	327	2	6	62	70	1683
Grand Total	147	1180	4	1331	1131	5	71	1207	18	199	326	543	4	11	114	129	3210
Apprch %	11	88.7	0.3		93.7	0.4	5.9		3.3	36.6	60		3.1	8.5	88.4		
Total %	4.6	36.8	0.1	41.5	35.2	0.2	2.2	37.6	0.6	6.2	10.2	16.9	0.1	0.3	3.6	4	

	Old Henry Road From North				Bush Farm Road From East				Old Henry Road From South				Bush Farm Road From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	24	147	1	172	**153**	**2**	11	**166**	2	**34**	29	65	**1**	1	16	18	421
08:15 AM	23	**149**	0	172	146	1	5	152	2	28	33	63	0	0	**23**	**23**	410
08:30 AM	14	139	0	153	127	0	7	134	3	25	62	90	0	2	12	14	391
08:45 AM	**46**	126	**2**	**174**	149	1	**13**	163	**4**	31	**74**	**109**	1	**3**	11	15	**461**
Total Volume	107	561	3	671	575	4	36	615	11	118	198	327	2	6	62	70	1683
% App. Total	15.9	83.6	0.4		93.5	0.7	6.9		3.4	36.1	60.6		2.9	8.6	88.6		
PHF	.582	.941	.375	.964	.940	.500	.692	.926	.688	.868	.669	.750	.500	.500	.674	.761	.913

Groups Printed- Unshifted

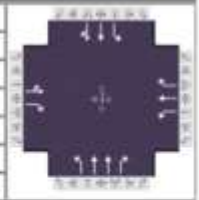
	Old Henry Road From North				Bush Farm Road From East				Old Henry Road From South				Bush Farm Road From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	19	57	1	77	97	4	21	122	13	99	105	217	0	1	4	5	421
04:15 PM	12	65	1	78	89	3	11	103	5	93	108	206	0	0	7	7	394
04:30 PM	20	65	1	86	67	0	15	82	15	126	99	240	0	1	7	8	416
04:45 PM	32	83	2	117	78	0	15	93	10	134	123	267	2	0	9	11	488
Total	83	270	5	358	331	7	62	400	43	452	435	930	2	2	27	31	1719
05:00 PM	27	91	2	120	107	1	11	119	25	175	145	345	0	3	6	9	593
05:15 PM	16	86	3	105	81	1	31	113	15	185	141	341	1	3	8	12	571
05:30 PM	18	81	2	101	77	1	12	90	13	175	131	319	2	3	12	17	527
05:45 PM	22	80	2	104	86	2	11	99	7	161	135	303	1	2	12	15	521
Total	83	338	9	430	351	5	65	421	60	696	552	1308	4	11	38	53	2212
Grand Total	166	608	14	788	682	12	127	821	103	1148	987	2238	6	13	65	84	3931
Apprch %	21.1	77.2	1.8		83.1	1.5	15.5		4.6	51.3	44.1		7.1	15.5	77.4		
Total %	4.2	15.5	0.4	20	17.3	0.3	3.2	20.9	2.6	29.2	25.1	56.9	0.2	0.3	1.7	2.1	

	Old Henry Road From North				Bush Farm Road From East				Old Henry Road From South				Bush Farm Road From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**27**	**91**	2	**120**	**107**	1	11	**119**	**25**	175	**145**	**345**	0	**3**	6	9	**593**
05:15 PM	16	86	**3**	105	81	1	**31**	113	15	**185**	141	341	1	3	8	12	571
05:30 PM	18	81	2	101	77	1	12	90	13	175	131	319	**2**	3	**12**	**17**	527
05:45 PM	22	80	2	104	86	**2**	11	99	7	161	135	303	1	2	12	15	521
Total Volume	83	338	9	430	351	5	65	421	60	696	552	1308	4	11	38	53	2212
% App. Total	19.3	78.6	2.1		83.4	1.2	15.4		4.6	53.2	42.2		7.5	20.8	71.7		
PHF	.769	.929	.750	.896	.820	.625	.524	.884	.600	.941	.952	.948	.500	.917	.792	.779	.933

Appendix B. Highway Capacity Software Printouts

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Jacobs			Duration, h	0.25
Analyst	D Zimmerman	Analysis Date	Jul 21, 2015	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.95
Intersection	Factory Lane	Analysis Year	2015	Analysis Period	1> 7:00
File Name	Factory AM 15.xus				
Project Description	Ball Homes				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	39	40	120	505	76	38	132	432	189	17	974	19

Signal Information			
Cycle, s	88.1	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

	EB			WB			NB			SB		
Green	1.4	5.0		30.6	15.0	10.0	0.0					
Yellow	3.5	0.0		4.3	4.0	4.0	0.0					
Red	3.0	0.0		1.6	2.2	3.5	0.0					

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4	3	8	1	6	5	2
Case Number		7.3	1.0	3.0	1.1	3.0	1.1	4.0
Phase Duration, s		17.5	21.2	38.7	13.0	41.5	7.9	36.5
Change Period, (*Y*+*Rc*), s		7.5	6.2	7.5	6.5	5.9	6.5	5.9
Max Allow Headway (*MAH*), s		4.4	4.0	4.4	4.0	3.7	4.0	3.7
Queue Clearance Time (g_s), s		8.2	17.0	4.5	6.3	9.6	2.6	24.3
Green Extension Time (g_e), s		1.4	0.0	1.4	0.4	6.5	0.0	6.3
Phase Call Probability		1.00	1.00	1.00	0.97	1.00	0.35	1.00
Max Out Probability		0.00	1.00	0.00	0.00	0.01	0.00	0.04

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	1	6	16	5	2	12
Adjusted Flow Rate (*v*), veh/h		83	126	532	80	40	139	455	199	18	524	521
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1623	1594	1792	1881	1594	1792	1791	1594	1792	1881	1868
Queue Service Time (g_s), s		2.0	6.2	15.0	2.5	1.4	4.3	7.6	5.4	0.6	22.3	22.3
Cycle Queue Clearance Time (g_c), s		4.0	6.2	15.0	2.5	1.4	4.3	7.6	5.4	0.6	22.3	22.3
Green Ratio (*g*/*C*)		0.11	0.19	0.31	0.35	0.37	0.43	0.40	0.57	0.36	0.35	0.35
Capacity (*c*), veh/h		245	298	480	666	590	265	1448	916	389	653	648
Volume-to-Capacity Ratio (*X*)		0.339	0.424	1.107	0.120	0.068	0.525	0.314	0.217	0.046	0.803	0.803
Available Capacity (c_a), veh/h		776	840	480	854	749	946	2234	1266	767	1174	1166
Back of Queue (*Q*), veh/ln (50th percentile)		1.6	2.3	12.4	1.0	0.5	1.7	2.9	1.6	0.2	9.4	9.3
Queue Storage Ratio (*RQ*) (50th percentile)		0.08	0.12	1.49	0.12	0.07	0.10	0.07	0.13	0.01	0.24	0.24
Uniform Delay (d_1), s/veh		36.3	31.7	31.1	19.2	17.9	19.7	17.9	9.1	18.2	26.1	26.1
Incremental Delay (d_2), s/veh		1.0	1.2	73.5	0.1	0.0	1.6	0.1	0.1	0.0	2.0	2.0
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh		37.3	32.8	104.6	19.3	18.0	21.3	18.0	9.2	18.2	28.1	28.1
Level of Service (LOS)		D	C	F	B	B	C	B	A	B	C	C
Approach Delay, s/veh / LOS	34.6	C		88.8	F		16.4	B		27.9	C	
Intersection Delay, s/veh / LOS	39.7						D					

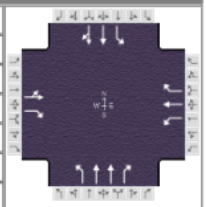
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.0	C	2.8	C	2.4	B	2.3	B
Bicycle LOS Score / LOS	0.8	A	1.6	A	1.1	A	1.4	A

HCS 2010™ Streets Version 6.65

Generated: 7/21/2015 2:46:33 PM

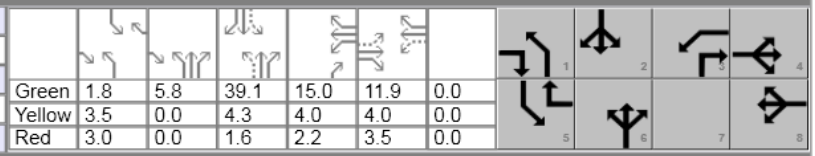
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Jacobs			Duration, h	0.25
Analyst	D Zimmerman	Analysis Date	Jul 21, 2015	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.95
Intersection	Factory Lane	Analysis Year	2022 No Build	Analysis Period	1> 7:00
File Name	Factory AM 22 NB.xus				
Project Description	Ball Homes				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	46	47	141	593	89	45	155	508	222	20	1144	22

Signal Information			
Cycle, s	99.7	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	1.8	5.8	39.1	15.0	11.9	0.0	
Yellow	3.5	0.0	4.3	4.0	4.0	0.0	
Red	3.0	0.0	1.6	2.2	3.5	0.0	

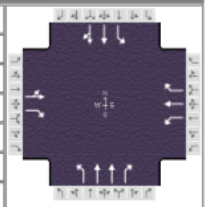
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4	3	8	1	6	5	2
Case Number		7.3	1.0	3.0	1.1	3.0	1.1	4.0
Phase Duration, s		19.4	21.2	40.6	14.1	50.9	8.3	45.0
Change Period, ($Y+R_c$), s		7.5	6.2	7.5	6.5	5.9	6.5	5.9
Max Allow Headway (*MAH*), s		4.4	4.0	4.4	4.0	3.7	4.0	3.7
Queue Clearance Time (g_s), s		10.2	17.0	5.5	7.2	11.6	2.7	31.5
Green Extension Time (g_e), s		1.6	0.0	1.6	0.5	8.4	0.0	7.6
Phase Call Probability		1.00	1.00	1.00	0.99	1.00	0.44	1.00
Max Out Probability		0.00	1.00	0.00	0.00	0.03	0.00	0.17

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	1	6	16	5	2	12
Adjusted Flow Rate (*v*), veh/h		98	148	624	94	47	163	535	234	21	616	612
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1603	1594	1792	1881	1594	1792	1791	1594	1792	1881	1868
Queue Service Time (g_s), s		3.5	8.2	15.0	3.5	2.0	5.2	9.6	6.8	0.7	29.5	29.5
Cycle Queue Clearance Time (g_c), s		5.5	8.2	15.0	3.5	2.0	5.2	9.6	6.8	0.7	29.5	29.5
Green Ratio (*g/C*)		0.12	0.20	0.29	0.33	0.35	0.48	0.45	0.60	0.41	0.39	0.39
Capacity (*c*), veh/h		245	312	429	624	557	253	1616	959	398	738	733
Volume-to-Capacity Ratio (*X*)		0.400	0.476	1.454	0.150	0.085	0.644	0.331	0.244	0.053	0.834	0.834
Available Capacity (c_a), veh/h		681	761	429	755	668	835	1975	1119	725	1038	1030
Back of Queue (*Q*), veh/ln (50th percentile)		2.2	3.2	28.8	1.5	0.7	2.1	3.7	2.1	0.3	12.9	12.9
Queue Storage Ratio (*RQ*) (50th percentile)		0.11	0.16	3.45	0.18	0.10	0.13	0.09	0.17	0.02	0.33	0.32
Uniform Delay (d_1), s/veh		41.0	35.6	35.8	23.4	21.8	21.6	17.7	9.3	17.7	27.4	27.4
Incremental Delay (d_2), s/veh		1.3	1.4	216.9	0.1	0.1	2.7	0.1	0.1	0.1	3.9	4.0
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh		42.3	37.0	252.7	23.6	21.8	24.3	17.8	9.4	17.8	31.3	31.3
Level of Service (LOS)		D	D	F	C	C	C	B	A	B	C	C
Approach Delay, s/veh / LOS	39.1	D		210.4	F		16.8	B		31.1	C	
Intersection Delay, s/veh / LOS	70.5						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.0	C	2.8	C	2.4	B	2.3	B
Bicycle LOS Score / LOS	0.9	A	1.8	A	1.3	A	1.5	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Jacobs			Duration, h	0.25
Analyst	D Zimmerman	Analysis Date	Jul 21, 2015	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.95
Intersection	Factory Lane	Analysis Year	2022 Build	Analysis Period	1> 7:00
File Name	Factory AM 22 B.xus				
Project Description	Ball Homes				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	46	53	141	697	105	53	155	508	253	23	1144	22

Signal Information			
Cycle, s	100.1	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	2.0	5.7	39.4	15.0	12.0	0.0	
Yellow	3.5	0.0	4.3	4.0	4.0	0.0	
Red	3.0	0.0	1.6	2.2	3.5	0.0	

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4	3	8	1	6	5	2
Case Number		7.3	1.0	3.0	1.1	3.0	1.1	4.0
Phase Duration, s		19.5	21.2	40.7	14.1	50.9	8.5	45.3
Change Period, (*Y*+*Rc*), s		7.5	6.2	7.5	6.5	5.9	6.5	5.9
Max Allow Headway (*MAH*), s		4.4	4.0	4.4	4.0	3.7	4.0	3.7
Queue Clearance Time (g_s), s		10.3	17.0	6.2	7.2	11.7	2.8	31.6
Green Extension Time (g_e), s		1.7	0.0	1.8	0.5	8.7	0.0	7.7
Phase Call Probability		1.00	1.00	1.00	0.99	1.00	0.49	1.00
Max Out Probability		0.00	1.00	0.00	0.00	0.03	0.00	0.18

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	1	6	16	5	2	12
Adjusted Flow Rate (*v*), veh/h		104	148	734	111	56	163	535	266	24	616	612
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1607	1594	1792	1881	1594	1792	1791	1594	1792	1881	1868
Queue Service Time (g_s), s		3.9	8.3	15.0	4.2	2.4	5.2	9.7	8.0	0.8	29.6	29.6
Cycle Queue Clearance Time (g_c), s		5.9	8.3	15.0	4.2	2.4	5.2	9.7	8.0	0.8	29.6	29.6
Green Ratio (*g*/*C*)		0.12	0.20	0.29	0.33	0.35	0.48	0.45	0.60	0.41	0.39	0.39
Capacity (*c*), veh/h		245	313	423	624	560	254	1612	956	400	740	735
Volume-to-Capacity Ratio (*X*)		0.425	0.474	1.733	0.177	0.100	0.643	0.332	0.279	0.061	0.832	0.833
Available Capacity (c_a), veh/h		679	759	423	751	668	832	1967	1114	722	1033	1026
Back of Queue (*Q*), veh/ln (50th percentile)		2.4	3.2	42.8	1.8	0.8	2.1	3.7	2.4	0.3	13.0	12.9
Queue Storage Ratio (*RQ*) (50th percentile)		0.12	0.16	5.13	0.21	0.12	0.13	0.09	0.21	0.02	0.33	0.33
Uniform Delay (d_1), s/veh		41.2	35.7	35.8	23.8	21.8	21.7	17.8	9.6	17.7	27.4	27.4
Incremental Delay (d_2), s/veh		1.4	1.3	339.5	0.1	0.1	2.7	0.1	0.1	0.1	3.9	4.0
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh		42.7	37.0	375.3	23.9	21.9	24.4	17.9	9.8	17.7	31.3	31.4
Level of Service (LOS)		D	D	F	C	C	C	B	A	B	C	C
Approach Delay, s/veh / LOS	39.3	D		310.3	F		16.8	B		31.1	C	
Intersection Delay, s/veh / LOS	102.2						F					

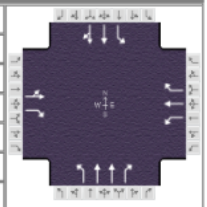
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.0	C	2.8	C	2.4	B	2.3	B
Bicycle LOS Score / LOS	0.9	A	2.0	A	1.3	A	1.5	A

HCS 2010™ Streets Version 6.65

Generated: 7/21/2015 2:46:33 PM

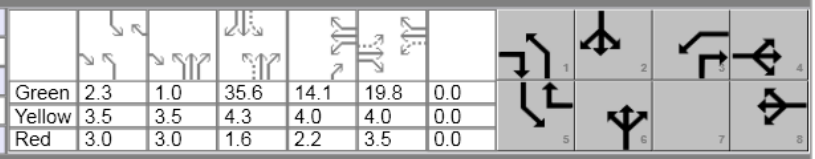
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Jacobs			Duration, h	0.25
Analyst	D Zimmerman	Analysis Date	Jul 21, 2015	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.95
Intersection	Factory Lane	Analysis Year	2015	Analysis Period	1> 7:00
File Name	Factory PM 15.xus				
Project Description	Ball Homes				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	113	85	197	249	209	40	188	965	606	28	424	97

Signal Information			
Cycle, s	105.5	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	2.3	1.0		35.6	14.1	19.8	0.0					
Yellow	3.5	3.5		4.3	4.0	4.0	0.0					
Red	3.0	3.0		1.6	2.2	3.5	0.0					

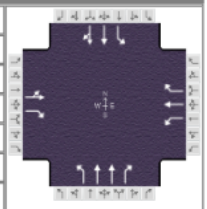
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4	3	8	1	6	5	2
Case Number		7.3	1.0	3.0	1.1	3.0	1.1	4.0
Phase Duration, s		27.3	20.3	47.6	16.3	49.1	8.8	41.5
Change Period, (*Y*+*Rc*), s		7.5	6.2	7.5	6.5	5.9	6.5	5.9
Max Allow Headway (*MAH*), s		4.5	4.0	4.5	4.0	3.7	4.0	3.7
Queue Clearance Time (g_s), s		16.9	13.9	10.7	9.2	34.2	3.1	14.5
Green Extension Time (g_e), s		2.5	0.1	3.0	0.6	8.9	0.0	10.8
Phase Call Probability		1.00	1.00	1.00	1.00	1.00	0.58	1.00
Max Out Probability		0.01	1.00	0.00	0.00	0.30	0.00	0.07

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	1	6	16	5	2	12
Adjusted Flow Rate (*v*), veh/h		208	207	262	220	42	198	1016	638	29	282	267
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1402	1594	1792	1881	1594	1792	1791	1594	1792	1881	1760
Queue Service Time (g_s), s		14.7	11.3	11.9	8.7	1.7	7.2	24.7	32.2	1.1	12.3	12.5
Cycle Queue Clearance Time (g_c), s		14.9	11.3	11.9	8.7	1.7	7.2	24.7	32.2	1.1	12.3	12.5
Green Ratio (*g*/*C*)		0.19	0.28	0.34	0.38	0.40	0.45	0.41	0.54	0.36	0.34	0.34
Capacity (*c*), veh/h		317	449	368	715	641	426	1466	865	195	636	595
Volume-to-Capacity Ratio (*X*)		0.657	0.462	0.712	0.308	0.066	0.465	0.693	0.737	0.151	0.443	0.448
Available Capacity (c_a), veh/h		583	753	384	715	641	937	1866	1043	495	980	917
Back of Queue (*Q*), veh/ln (50th percentile)		5.2	4.3	5.4	3.7	0.6	2.9	9.9	11.0	0.5	5.3	5.1
Queue Storage Ratio (*RQ*) (50th percentile)		0.26	0.22	0.65	0.44	0.09	0.17	0.25	0.92	0.03	0.13	0.13
Uniform Delay (d_1), s/veh		40.8	31.3	28.6	23.0	19.4	19.2	25.7	18.4	23.8	27.2	27.3
Incremental Delay (d_2), s/veh		2.8	0.9	5.8	0.2	0.0	0.8	0.7	2.1	0.4	0.4	0.5
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh		43.6	32.2	34.4	23.2	19.4	20.0	26.4	20.5	24.2	27.6	27.7
Level of Service (LOS)		D	C	C	C	B	C	C	C	C	C	C
Approach Delay, s/veh / LOS	37.9	D		28.5	C		23.7	C		27.5	C	
Intersection Delay, s/veh / LOS	26.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.0	C	2.8	C	2.4	B	2.3	B
Bicycle LOS Score / LOS	1.2	A	1.4	A	2.0	B	1.0	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Jacobs			Duration, h	0.25
Analyst	D Zimmerman	Analysis Date	Jul 21, 2015	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.95
Intersection	Factory Lane	Analysis Year	2022 No Build	Analysis Period	1> 7:00
File Name	Factory PM 22 NB.xus				
Project Description	Ball Homes				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	133	100	231	293	246	47	221	1134	712	33	498	114

Signal Information			
Cycle, s	123.5	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	2.8	3.1	44.4	15.0	25.5	0.0	
Yellow	3.5	3.5	4.3	4.0	4.0	0.0	
Red	3.0	3.0	1.6	2.2	3.5	0.0	

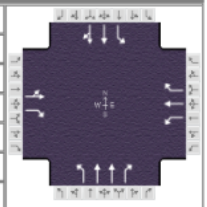
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4	3	8	1	6	5	2
Case Number		7.3	1.0	3.0	1.1	3.0	1.1	4.0
Phase Duration, s		33.0	21.2	54.2	18.9	59.9	9.3	50.3
Change Period, (*Y*+*Rc*), s		7.5	6.2	7.5	6.5	5.9	6.5	5.9
Max Allow Headway (*MAH*), s		4.5	4.0	4.5	4.0	3.7	4.0	3.7
Queue Clearance Time (g_s), s		23.5	17.0	14.2	11.6	50.3	3.5	19.1
Green Extension Time (g_e), s		2.0	0.0	3.6	0.8	3.7	0.0	14.0
Phase Call Probability		1.00	1.00	1.00	1.00	1.00	0.70	1.00
Max Out Probability		0.07	1.00	0.01	0.00	0.96	0.00	0.22

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	1	6	16	5	2	12
Adjusted Flow Rate (*v*), veh/h		245	243	308	259	49	233	1194	749	35	332	313
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1361	1594	1792	1881	1594	1792	1791	1594	1792	1881	1760
Queue Service Time (g_s), s		21.5	15.4	15.0	12.2	2.4	9.6	34.7	48.3	1.5	16.9	17.1
Cycle Queue Clearance Time (g_c), s		21.5	15.4	15.0	12.2	2.4	9.6	34.7	48.3	1.5	16.9	17.1
Green Ratio (*g*/*C*)		0.21	0.31	0.34	0.38	0.40	0.48	0.44	0.56	0.38	0.36	0.36
Capacity (*c*), veh/h		328	491	319	712	640	413	1567	891	165	676	633
Volume-to-Capacity Ratio (*X*)		0.749	0.496	0.968	0.364	0.077	0.563	0.762	0.841	0.211	0.490	0.494
Available Capacity (c_a), veh/h		487	677	319	712	640	813	1595	904	414	838	784
Back of Queue (*Q*), veh/ln (50th percentile)		7.4	5.9	10.7	5.4	0.9	4.0	14.5	18.1	0.7	7.5	7.1
Queue Storage Ratio (*RQ*) (50th percentile)		0.38	0.30	1.29	0.65	0.13	0.24	0.37	1.52	0.04	0.19	0.18
Uniform Delay (d_1), s/veh		47.4	34.9	36.7	27.6	22.8	21.5	29.3	22.7	27.3	30.8	30.8
Incremental Delay (d_2), s/veh		4.2	0.9	41.7	0.3	0.1	1.2	2.1	7.0	0.6	0.5	0.5
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh		51.6	35.9	78.5	28.0	22.9	22.8	31.4	29.7	27.9	31.2	31.3
Level of Service (LOS)		D	D	E	C	C	C	C	C	C	C	C
Approach Delay, s/veh / LOS	43.8	D		52.8	D		29.9	C		31.1	C	
Intersection Delay, s/veh / LOS	35.4						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.0	C	2.8	C	2.4	B	2.3	B
Bicycle LOS Score / LOS	1.3	A	1.5	A	2.3	B	1.0	A

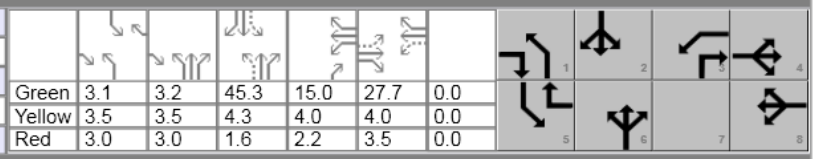
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Jacobs			Duration, h	0.25
Analyst	D Zimmerman	Analysis Date	Jul 21, 2015	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.95
Intersection	Factory Lane	Analysis Year	2022 Build	Analysis Period	1> 7:00
File Name	Factory PM 22 B.xus				
Project Description	Ball Homes				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	133	116	231	331	278	54	221	1134	828	39	498	114

Signal Information			
Cycle, s	126.9	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.1	3.2	45.3	15.0	27.7	0.0	
Yellow	3.5	3.5	4.3	4.0	4.0	0.0	
Red	3.0	3.0	1.6	2.2	3.5	0.0	

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4	3	8	1	6	5	2
Case Number		7.3	1.0	3.0	1.1	3.0	1.1	4.0
Phase Duration, s		35.2	21.2	56.4	19.2	60.9	9.6	51.2
Change Period, (*Y*+*Rc*), s		7.5	6.2	7.5	6.5	5.9	6.5	5.9
Max Allow Headway (*MAH*), s		4.5	4.0	4.5	4.0	3.8	4.0	3.8
Queue Clearance Time (g_s), s		25.7	17.0	16.4	12.0	57.0	3.8	19.6
Green Extension Time (g_e), s		2.0	0.0	3.8	0.8	0.0	0.1	15.4
Phase Call Probability		1.00	1.00	1.00	1.00	1.00	0.76	1.00
Max Out Probability		0.14	1.00	0.02	0.00	1.00	0.00	0.28

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	1	6	16	5	2	12
Adjusted Flow Rate (*v*), veh/h		262	243	348	293	57	233	1194	872	41	332	313
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1358	1594	1792	1881	1594	1792	1791	1594	1792	1881	1760
Queue Service Time (g_s), s		23.7	15.6	15.0	14.4	2.8	10.0	35.9	55.0	1.8	17.5	17.6
Cycle Queue Clearance Time (g_c), s		23.7	15.6	15.0	14.4	2.8	10.0	35.9	55.0	1.8	17.5	17.6
Green Ratio (*g*/*C*)		0.22	0.32	0.35	0.39	0.41	0.47	0.43	0.55	0.38	0.36	0.36
Capacity (*c*), veh/h		340	509	309	725	653	409	1553	880	163	672	628
Volume-to-Capacity Ratio (*X*)		0.771	0.478	1.127	0.403	0.087	0.569	0.769	0.991	0.252	0.494	0.497
Available Capacity (c_a), veh/h		472	663	309	725	653	794	1553	880	402	815	763
Back of Queue (*Q*), veh/ln (50th percentile)		8.3	6.0	14.9	6.3	1.0	4.1	15.2	30.4	0.8	7.8	7.3
Queue Storage Ratio (*RQ*) (50th percentile)		0.42	0.30	1.79	0.76	0.15	0.25	0.38	2.55	0.05	0.20	0.19
Uniform Delay (d_1), s/veh		48.0	34.7	37.7	28.4	22.9	22.4	30.5	28.1	28.3	31.8	31.9
Incremental Delay (d_2), s/veh		5.8	0.8	89.9	0.4	0.1	1.2	2.3	28.0	0.8	0.5	0.5
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh		53.8	35.6	127.6	28.7	23.0	23.6	32.9	56.1	29.1	32.3	32.4
Level of Service (LOS)		D	D	F	C	C	C	C	E	C	C	C
Approach Delay, s/veh / LOS	45.0	D		77.6	E		40.8	D		32.2	C	
Intersection Delay, s/veh / LOS	46.0						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.0	C	2.8	C	2.4	B	2.3	B
Bicycle LOS Score / LOS	1.3	A	1.6	A	2.4	B	1.1	A

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jacobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2015*
Analysis Time Period	*AM Peak*		

Project Description	*Ball Homes Factory Lane*
East/West Street: *Factory Lane*	North/South Street: *Colonial Springs*
Intersection Orientation: *East-West*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*6*	*167*			*322*	*14*
Peak-Hour Factor, PHF	*0.91*	*0.91*	*1.00*	*1.00*	*0.91*	*0.91*
Hourly Flow Rate, HFR (veh/h)	*6*	*183*	*0*	*0*	*353*	*15*
Percent Heavy Vehicles	*1*	--	--	*0*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*0*
Configuration	*L*	*T*				*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*26*		*40*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*0.91*	*1.00*	*0.91*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*28*	*0*	*43*
Percent Heavy Vehicles	*0*	*0*	*0*	*1*	*0*	*1*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (veh/h)	*6*						*71*	
C (m) (veh/h)	*1196*						*636*	
v/c	*0.01*						*0.11*	
95% queue length	*0.02*						*0.38*	
Control Delay (s/veh)	*8.0*						*11.4*	
LOS	*A*						*B*	
Approach Delay (s/veh)	--	--				*11.4*		
Approach LOS	--	--				*B*		

HCS+™ Version 5.6

Generated: 7/21/2015 2:18 PM

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jacobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2022 No Build*
Analysis Time Period	*AM Peak*		

Project Description	*Ball Homes Factory Lane*
East/West Street: *Factory Lane*	North/South Street: *Colonial Springs*
Intersection Orientation: *East-West*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*6*	*196*			*378*	*14*
Peak-Hour Factor, PHF	*0.91*	*0.91*	*1.00*	*1.00*	*0.91*	*0.91*
Hourly Flow Rate, HFR (veh/h)	*6*	*215*	*0*	*0*	*415*	*15*
Percent Heavy Vehicles	*1*	--	--	*0*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*0*
Configuration	*L*	*T*				*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*26*		*40*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*0.91*	*1.00*	*0.91*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*28*	*0*	*43*
Percent Heavy Vehicles	*0*	*0*	*0*	*1*	*0*	*1*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (veh/h)	*6*						*71*	
C (m) (veh/h)	*1135*						*587*	
v/c	*0.01*						*0.12*	
95% queue length	*0.02*						*0.41*	
Control Delay (s/veh)	*8.2*						*12.0*	
LOS	*A*						*B*	
Approach Delay (s/veh)	--	--					*12.0*	
Approach LOS	--	--					*B*	

HCS+™ Version 5.6

Generated: 7/21/2015 2:21 PM

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jacobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2022 Build*
Analysis Time Period	*AM Peak*		

Project Description	*Ball Homes Factory Lane*
East/West Street: *Factory Lane*	North/South Street: *Colonial Springs*
Intersection Orientation: *East-West*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*6*	*236*			*506*	*14*
Peak-Hour Factor, PHF	*0.91*	*0.91*	*1.00*	*1.00*	*0.91*	*0.91*
Hourly Flow Rate, HFR (veh/h)	*6*	*259*	*0*	*0*	*556*	*15*
Percent Heavy Vehicles	*1*	--	--	*0*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*0*
Configuration	*L*	*T*				*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*26*		*40*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*0.91*	*1.00*	*0.91*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*28*	*0*	*43*
Percent Heavy Vehicles	*0*	*0*	*0*	*1*	*0*	*1*	
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (veh/h)	*6*						*71*	
C (m) (veh/h)	*1007*						*492*	
v/c	*0.01*						*0.14*	
95% queue length	*0.02*						*0.50*	
Control Delay (s/veh)	*8.6*						*13.5*	
LOS	*A*						*B*	
Approach Delay (s/veh)	--	--					*13.5*	
Approach LOS	--	--					*B*	

HCS+™ Version 5.6

Generated: 7/21/2015 2:23 PM

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jacobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2015*
Analysis Time Period	*PM Peak*		

Project Description	*Ball Homes Factory Lane*
East/West Street:	*Factory Lane*
North/South Street:	*Colonial Springs*
Intersection Orientation:	*East-West*
Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*40*	*471*			*349*	*34*
Peak-Hour Factor, PHF	*0.94*	*0.94*	*1.00*	*1.00*	*0.94*	*0.94*
Hourly Flow Rate, HFR (veh/h)	*42*	*501*	*0*	*0*	*371*	*36*
Percent Heavy Vehicles	*1*	--	--	*0*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*0*
Configuration	*L*	*T*				*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*55*		*22*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*0.94*	*1.00*	*0.94*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*58*	*0*	*23*
Percent Heavy Vehicles	*0*	*0*	*0*	*1*	*0*	*1*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (veh/h)	*42*						*81*	
C (m) (veh/h)	*1157*						*447*	
v/c	*0.04*						*0.18*	
95% queue length	*0.11*						*0.65*	
Control Delay (s/veh)	*8.2*						*14.8*	
LOS	*A*						*B*	
Approach Delay (s/veh)	--	--					*14.8*	
Approach LOS	--	--					*B*	

HCS+™ Version 5.6

Generated: 7/21/2015 2:24 PM

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jacobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2022 No Build*
Analysis Time Period	*PM Peak*		

Project Description	*Ball Homes Factory Lane*
East/West Street:	*Factory Lane*
North/South Street:	*Colonial Springs*
Intersection Orientation:	*East-West*
Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*40*	*553*			*410*	*34*
Peak-Hour Factor, PHF	*0.94*	*0.94*	*1.00*	*1.00*	*0.94*	*0.94*
Hourly Flow Rate, HFR (veh/h)	*42*	*588*	*0*	*0*	*436*	*36*
Percent Heavy Vehicles	*1*	--	--	*0*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*0*
Configuration	*L*	*T*				*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*55*		*22*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*0.94*	*1.00*	*0.94*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*58*	*0*	*23*
Percent Heavy Vehicles	*0*	*0*	*0*	*1*	*0*	*1*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (veh/h)	*42*						*81*	
C (m) (veh/h)	*1095*						*398*	
v/c	*0.04*						*0.20*	
95% queue length	*0.12*						*0.75*	
Control Delay (s/veh)	*8.4*						*16.3*	
LOS	*A*						*C*	
Approach Delay (s/veh)	--	--					*16.3*	
Approach LOS	--	--					*C*	

HCS+™ Version 5.6

Generated: 7/21/2015 2:25 PM

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jacobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2022 Build*
Analysis Time Period	*PM Peak*		

Project Description	*Ball Homes Factory Lane*
East/West Street:	*Factory Lane*
North/South Street:	*Colonial Springs*
Intersection Orientation:	*East-West*
Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*40*	*689*			*487*	*34*
Peak-Hour Factor, PHF	*0.94*	*0.94*	*1.00*	*1.00*	*0.94*	*0.94*
Hourly Flow Rate, HFR (veh/h)	*42*	*732*	*0*	*0*	*518*	*36*
Percent Heavy Vehicles	*1*	--	--	*0*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*0*
Configuration	*L*	*T*				*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*55*		*22*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*0.94*	*1.00*	*0.94*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*58*	*0*	*23*
Percent Heavy Vehicles	*0*	*0*	*0*	*1*	*0*	*1*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (veh/h)	*42*						*81*	
C (m) (veh/h)	*1021*						*338*	
v/c	*0.04*						*0.24*	
95% queue length	*0.13*						*0.92*	
Control Delay (s/veh)	*8.7*						*19.0*	
LOS	*A*						*C*	
Approach Delay (s/veh)	--	--					*19.0*	
Approach LOS	--	--					*C*	

HCS+™ Version 5.6

Generated: 7/21/2015 2:26 PM

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jacobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2015*
Analysis Time Period	*AM Peak*		

Project Description	*Ball Homes Factory Lane*
East/West Street: *Factory Lane*	North/South Street: *Terrace Springs Drive*
Intersection Orientation: *East-West*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*18*	*139*	*18*	*1*	*184*	*3*
Peak-Hour Factor, PHF	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*
Hourly Flow Rate, HFR (veh/h)	*20*	*157*	*20*	*1*	*209*	*3*
Percent Heavy Vehicles	*1*	--	--	*1*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*1*	*1*	*0*
Configuration	*L*		*TR*	*L*		*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*63*	*1*	*15*	*73*	*0*	*5*
Peak-Hour Factor, PHF	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*
Hourly Flow Rate, HFR (veh/h)	*71*	*1*	*17*	*82*	*0*	*5*
Percent Heavy Vehicles	*1*	*1*	*1*	*1*	*1*	*1*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*		*LTR*			*LTR*	
v (veh/h)	*20*	*1*		*89*			*87*	
C (m) (veh/h)	*1364*	*1405*		*635*			*602*	
v/c	*0.01*	*0.00*		*0.14*			*0.14*	
95% queue length	*0.04*	*0.00*		*0.49*			*0.50*	
Control Delay (s/veh)	*7.7*	*7.6*		*11.6*			*12.0*	
LOS	*A*	*A*		*B*			*B*	
Approach Delay (s/veh)	--	--	*11.6*			*12.0*		
Approach LOS	--	--	*B*			*B*		

HCS+™ Version 5.6

Generated: 7/21/2015 2:30 PM

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jacobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2022 No Build*
Analysis Time Period	*AM Peak*		

Project Description	*Ball Homes Factory Lane*
East/West Street: *Factory Lane*	North/South Street: *Terrace Springs Drive*
Intersection Orientation: *East-West*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*18*	*163*	*18*	*1*	*216*	*3*
Peak-Hour Factor, PHF	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*
Hourly Flow Rate, HFR (veh/h)	*20*	*185*	*20*	*1*	*245*	*3*
Percent Heavy Vehicles	*1*	--	--	*1*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*1*	*1*	*0*
Configuration	*L*		*TR*	*L*		*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*63*	*1*	*15*	*73*	*0*	*5*
Peak-Hour Factor, PHF	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*
Hourly Flow Rate, HFR (veh/h)	*71*	*1*	*17*	*82*	*0*	*5*
Percent Heavy Vehicles	*1*	*1*	*1*	*1*	*1*	*1*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*		*LTR*			*LTR*	
v (veh/h)	*20*	*1*		*89*			*87*	
C (m) (veh/h)	*1324*	*1372*		*598*			*566*	
v/c	*0.02*	*0.00*		*0.15*			*0.15*	
95% queue length	*0.05*	*0.00*		*0.52*			*0.54*	
Control Delay (s/veh)	*7.8*	*7.6*		*12.1*			*12.5*	
LOS	*A*	*A*		*B*			*B*	
Approach Delay (s/veh)	--	--	*12.1*			*12.5*		
Approach LOS	--	--	*B*			*B*		

HCS+™ Version 5.6

Generated: 7/21/2015 2:31 PM

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jacobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2022 Build*
Analysis Time Period	*AM Peak*		

Project Description	*Ball Homes Factory Lane*
East/West Street: *Factory Lane*	North/South Street: *Terrace Springs Drive*
Intersection Orientation: *East-West*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*18*	*203*	*18*	*1*	*344*	*3*
Peak-Hour Factor, PHF	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*
Hourly Flow Rate, HFR (veh/h)	*20*	*230*	*20*	*1*	*390*	*3*
Percent Heavy Vehicles	*1*	--	--	*1*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*1*	*1*	*0*
Configuration	*L*		*TR*	*L*		*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*63*	*1*	*15*	*73*	*0*	*5*
Peak-Hour Factor, PHF	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*
Hourly Flow Rate, HFR (veh/h)	*71*	*1*	*17*	*82*	*0*	*5*
Percent Heavy Vehicles	*1*	*1*	*1*	*1*	*1*	*1*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*		*LTR*			*LTR*	
v (veh/h)	*20*	*1*		*89*			*87*	
C (m) (veh/h)	*1171*	*1321*		*501*			*470*	
v/c	*0.02*	*0.00*		*0.18*			*0.19*	
95% queue length	*0.05*	*0.00*		*0.64*			*0.67*	
Control Delay (s/veh)	*8.1*	*7.7*		*13.7*			*14.4*	
LOS	*A*	*A*		*B*			*B*	
Approach Delay (s/veh)	--	--	*13.7*			*14.4*		
Approach LOS	--	--	*B*			*B*		

HCS+™ Version 5.6 Generated: 7/21/2015 2:33 PM

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jacobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2015*
Analysis Time Period	*PM Peak*		

Project Description	*Ball Homes Factory Lane*
East/West Street: *Factory Lane*	North/South Street: *Terrace Springs Drive*
Intersection Orientation: *East-West*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*74*	*254*	*66*	*9*	*291*	*24*
Peak-Hour Factor, PHF	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*
Hourly Flow Rate, HFR (veh/h)	*84*	*288*	*75*	*10*	*330*	*27*
Percent Heavy Vehicles	*1*	--	--	*1*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*1*	*1*	*0*
Configuration	*L*		*TR*	*L*		*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*26*	*0*	*8*	*6*	*1*	*36*
Peak-Hour Factor, PHF	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*
Hourly Flow Rate, HFR (veh/h)	*29*	*0*	*9*	*6*	*1*	*40*
Percent Heavy Vehicles	*1*	*1*	*1*	*1*	*1*	*1*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*		*LTR*			*LTR*	
v (veh/h)	*84*	*10*		*38*			*47*	
C (m) (veh/h)	*1207*	*1201*		*393*			*610*	
v/c	*0.07*	*0.01*		*0.10*			*0.08*	
95% queue length	*0.22*	*0.03*		*0.32*			*0.25*	
Control Delay (s/veh)	*8.2*	*8.0*		*15.1*			*11.4*	
LOS	*A*	*A*		*C*			*B*	
Approach Delay (s/veh)	--	--	*15.1*			*11.4*		
Approach LOS	--	--	*C*			*B*		

HCS+™ Version 5.6

Generated: 7/21/2015 2:34 PM

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jacobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2022 No Build*
Analysis Time Period	*PM Peak*		

Project Description	*Ball Homes Factory Lane*
East/West Street: *Factory Lane*	North/South Street: *Terrace Springs Drive*
Intersection Orientation: *East-West*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*74*	*298*	*66*	*9*	*342*	*24*
Peak-Hour Factor, PHF	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*
Hourly Flow Rate, HFR (veh/h)	*84*	*338*	*75*	*10*	*388*	*27*
Percent Heavy Vehicles	*1*	--	--	*1*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*1*	*1*	*0*
Configuration	*L*		*TR*	*L*		*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*26*	*0*	*8*	*6*	*1*	*36*
Peak-Hour Factor, PHF	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*
Hourly Flow Rate, HFR (veh/h)	*29*	*0*	*9*	*6*	*1*	*40*
Percent Heavy Vehicles	*1*	*1*	*1*	*1*	*1*	*1*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*		*LTR*			*LTR*	
v (veh/h)	*84*	*10*		*38*			*47*	
C (m) (veh/h)	*1149*	*1151*		*355*			*561*	
v/c	*0.07*	*0.01*		*0.11*			*0.08*	
95% queue length	*0.24*	*0.03*		*0.36*			*0.27*	
Control Delay (s/veh)	*8.4*	*8.2*		*16.4*			*12.0*	
LOS	*A*	*A*		*C*			*B*	
Approach Delay (s/veh)	--	--	*16.4*			*12.0*		
Approach LOS	--	--	*C*			*B*		

HCS+™ Version 5.6

Generated: 7/21/2015 2:36 PM

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jacobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2022 Build*
Analysis Time Period	*PM Peak*		

Project Description	*Ball Homes Factory Lane*
East/West Street: *Factory Lane*	North/South Street: *Terrace Springs Drive*
Intersection Orientation: *East-West*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*74*	*434*	*66*	*9*	*419*	*24*
Peak-Hour Factor, PHF	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*
Hourly Flow Rate, HFR (veh/h)	*84*	*493*	*75*	*10*	*476*	*27*
Percent Heavy Vehicles	*1*	--	--	*1*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*1*	*1*	*0*
Configuration	*L*		*TR*	*L*		*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*26*	*0*	*8*	*6*	*1*	*36*
Peak-Hour Factor, PHF	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*
Hourly Flow Rate, HFR (veh/h)	*29*	*0*	*9*	*6*	*1*	*40*
Percent Heavy Vehicles	*1*	*1*	*1*	*1*	*1*	*1*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*		*LTR*			*LTR*	
v (veh/h)	*84*	*10*		*38*			*47*	
C (m) (veh/h)	*1067*	*1009*		*283*			*481*	
v/c	*0.08*	*0.01*		*0.13*			*0.10*	
95% queue length	*0.26*	*0.03*		*0.46*			*0.32*	
Control Delay (s/veh)	*8.7*	*8.6*		*19.7*			*13.3*	
LOS	*A*	*A*		*C*			*B*	
Approach Delay (s/veh)	--	--	*19.7*			*13.3*		
Approach LOS	--	--	*C*			*B*		

HCS+™ Version 5.6

Generated: 7/21/2015 2:37 PM

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jacobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2022*
Analysis Time Period	*AM Peak*		

Project Description	*Ball Homes Factory Lane*
East/West Street: *Factory Lane*	North/South Street: *Main Entrance*
Intersection Orientation: *East-West*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*38*	*185*			*173*	*25*
Peak-Hour Factor, PHF	*0.88*	*0.88*	*1.00*	*1.00*	*0.88*	*0.88*
Hourly Flow Rate, HFR (veh/h)	*43*	*210*	*0*	*0*	*196*	*28*
Percent Heavy Vehicles	*1*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*0*
Configuration	*L*	*T*				*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*80*		*118*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*0.88*	*1.00*	*0.88*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*90*	*0*	*134*
Percent Heavy Vehicles	*0*	*0*	*0*	*1*	*0*	*1*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (veh/h)	*43*						*224*	
C (m) (veh/h)	*1351*						*712*	
v/c	*0.03*						*0.31*	
95% queue length	*0.10*						*1.35*	
Control Delay (s/veh)	*7.8*						*12.4*	
LOS	*A*						*B*	
Approach Delay (s/veh)	--	--					*12.4*	
Approach LOS	--	--					*B*	

HCS+™ Version 5.6

Generated: 7/21/2015 2:39 PM

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jacobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2022*
Analysis Time Period	*PM Peak*		

Project Description	*Ball Homes Factory Lane*
East/West Street: *Factory Lane*	North/South Street: *Main Entrance*
Intersection Orientation: *East-West*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*127*	*321*			*391*	*84*
Peak-Hour Factor, PHF	*0.88*	*0.88*	*1.00*	*1.00*	*0.88*	*0.88*
Hourly Flow Rate, HFR (veh/h)	*144*	*364*	*0*	*0*	*444*	*95*
Percent Heavy Vehicles	*1*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*0*
Configuration	*L*	*T*				*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*48*		*73*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*0.88*	*1.00*	*0.88*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*54*	*0*	*82*
Percent Heavy Vehicles	*0*	*0*	*0*	*1*	*0*	*1*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*						*LR*	
v (veh/h)	*144*						*136*	
C (m) (veh/h)	*1034*						*439*	
v/c	*0.14*						*0.31*	
95% queue length	*0.48*						*1.30*	
Control Delay (s/veh)	*9.0*						*16.8*	
LOS	*A*						*C*	
Approach Delay (s/veh)	--	--				*16.8*		
Approach LOS	--	--				*C*		

HCS+™ Version 5.6 Generated: 7/21/2015 2:41 PM

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jacobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2022*
Analysis Time Period	*AM Peak*		

Project Description	*Ball Homes Factory Lane*
East/West Street:	*Factory Lane*
Intersection Orientation:	*East-West*
North/South Street:	*Secondary Entrance*
Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*2*	*263*			*188*	*1*
Peak-Hour Factor, PHF	*0.88*	*0.88*	*1.00*	*1.00*	*0.88*	*0.88*
Hourly Flow Rate, HFR (veh/h)	*2*	*298*	*0*	*0*	*213*	*1*
Percent Heavy Vehicles	*1*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*6*		*10*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*0.88*	*1.00*	*0.88*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*6*	*0*	*11*
Percent Heavy Vehicles	*0*	*0*	*0*	*1*	*0*	*1*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*						*LR*	
v (veh/h)	*2*						*17*	
C (m) (veh/h)	*1362*						*685*	
v/c	*0.00*						*0.02*	
95% queue length	*0.00*						*0.08*	
Control Delay (s/veh)	*7.6*						*10.4*	
LOS	*A*						*B*	
Approach Delay (s/veh)	--	--				*10.4*		
Approach LOS	--	--				*B*		

HCS+™ Version 5.6

Generated: 7/21/2015 2:44 PM

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jacobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2022*
Analysis Time Period	*PM Peak*		

Project Description	*Ball Homes Factory Lane*
East/West Street: *Factory Lane*	North/South Street: *Secondary Entrance*
Intersection Orientation: *East-West*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*9*	*360*			*471*	*6*
Peak-Hour Factor, PHF	*0.88*	*0.88*	*1.00*	*1.00*	*0.88*	*0.88*
Hourly Flow Rate, HFR (veh/h)	*10*	*409*	*0*	*0*	*535*	*6*
Percent Heavy Vehicles	*1*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)				*3*		*4*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*0.88*	*1.00*	*0.88*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*3*	*0*	*4*
Percent Heavy Vehicles	*0*	*0*	*0*	*1*	*0*	*1*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*						*LR*	
v (veh/h)	*10*						*7*	
C (m) (veh/h)	*1033*						*388*	
v/c	*0.01*						*0.02*	
95% queue length	*0.03*						*0.06*	
Control Delay (s/veh)	*8.5*						*14.4*	
LOS	*A*						*B*	
Approach Delay (s/veh)	--	--				*14.4*		
Approach LOS	--	--				*B*		

HCS+™ Version 5.6 Generated: 7/21/2015 2:45 PM

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jacobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2015*
Analysis Time Period	*AM Peak*		

Project ID *Ball Homes Factory Lane*

East/West Street: *Factory Lane* | North/South Street: *Old Henry Road*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*12*	*168*	*0*	*0*	*86*	*77*
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*0*	*0*	*0*	*485*	*0*	*53*
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	*LT*		*TR*				*LR*	
PHF	*0.95*		*0.95*				*0.95*	
Flow Rate (veh/h)	*188*		*171*				*565*	
% Heavy Vehicles	*1*		*1*				*1*	
No. Lanes	*1*		*1*		*0*		*1*	
Geometry Group	*1*		*1*				*1*	
Duration, T	*0.25*							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	*0.1*		*0.0*				*0.9*	
Prop. Right-Turns	*0.0*		*0.5*				*0.1*	
Prop. Heavy Vehicle	*0.0*		*0.0*				*0.0*	
hLT-adj	*0.2*	*0.2*	*0.2*	*0.2*			*0.2*	*0.2*
hRT-adj	*-0.6*	*-0.6*	*-0.6*	*-0.6*			*-0.6*	*-0.6*
hHV-adj	*1.7*	*1.7*	*1.7*	*1.7*			*1.7*	*1.7*
hadj, computed	*0.0*		*-0.3*				*0.1*	

Departure Headway and Service Time

hd, initial value (s)	*3.20*		*3.20*				*3.20*	
x, initial	*0.17*		*0.15*				*0.50*	
hd, final value (s)	*5.81*		*5.55*				*5.08*	
x, final value	*0.30*		*0.26*				*0.80*	
Move-up time, m (s)	*2.0*		*2.0*				*2.0*	
Service Time, t_s (s)	*3.8*		*3.6*				*3.1*	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	*438*		*421*				*699*	
Delay (s/veh)	*11.32*		*10.53*				*24.92*	
LOS	*B*		*B*				*C*	
Approach: Delay (s/veh)	*11.32*		*10.53*				*24.92*	
LOS	*B*		*B*				*C*	
Intersection Delay (s/veh)	*19.49*							
Intersection LOS	*C*							

 HCS+™ Version 5.3 Generated: 7/21/2015 12:15 PM

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jaccobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2022 No Build*
Analysis Time Period	*AM Peak*		
Project Description	*Ball Homes Factory Lane*		
East/West Street:	*Factory Lane*	North/South Street:	*Old Henry Road*
Intersection Orientation:	*North-South*	Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*101*	*142*			*729*	*62*
Peak-Hour Factor, PHF	*0.95*	*0.95*	*1.00*	*1.00*	*0.95*	*0.95*
Hourly Flow Rate, HFR (veh/h)	*106*	*149*	*0*	*0*	*767*	*65*
Percent Heavy Vehicles	*1*	--	--	*0*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*0*
Configuration	*L*	*T*				*TR*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*14*		*197*			
Peak-Hour Factor, PHF	*0.95*	*1.00*	*0.95*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*14*	*0*	*207*	*0*	*0*	*0*
Percent Heavy Vehicles	*1*	*0*	*1*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*					*L*		*R*
v (veh/h)	*106*					*14*		*207*
C (m) (veh/h)	*805*					*318*		*387*
v/c	*0.13*					*0.04*		*0.53*
95% queue length	*0.45*					*0.14*		*3.04*
Control Delay (s/veh)	*10.1*					*16.8*		*24.5*
LOS	*B*					*C*		*C*
Approach Delay (s/veh)	--	--				*24.0*		
Approach LOS	--	--				*C*		

HCS+™ Version 5.6

Generated: 7/21/2015 12:23 PM

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jaccobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2022 Build*
Analysis Time Period	*AM Peak*		

Project Description	*Ball Homes Factory Lane*
East/West Street: *Factory Lane*	North/South Street: *Old Henry Road*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*127*	*142*			*729*	*62*
Peak-Hour Factor, PHF	*0.95*	*0.95*	*1.00*	*1.00*	*0.95*	*0.95*
Hourly Flow Rate, HFR (veh/h)	*133*	*149*	*0*	*0*	*767*	*65*
Percent Heavy Vehicles	*1*	--	--	*0*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*0*
Configuration	*L*	*T*				*TR*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*14*		*283*			
Peak-Hour Factor, PHF	*0.95*	*1.00*	*0.95*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*14*	*0*	*297*	*0*	*0*	*0*
Percent Heavy Vehicles	*1*	*0*	*1*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*					*L*		*R*
v (veh/h)	*133*					*14*		*297*
C (m) (veh/h)	*805*					*301*		*387*
v/c	*0.17*					*0.05*		*0.77*
95% queue length	*0.59*					*0.15*		*6.33*
Control Delay (s/veh)	*10.4*					*17.5*		*39.1*
LOS	*B*					*C*		*E*
Approach Delay (s/veh)	--	--				*38.1*		
Approach LOS	--	--				*E*		

HCS+™ Version 5.6

Generated: 7/21/2015 12:25 PM

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jacobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2015*
Analysis Time Period	*PM Peak*		

Project ID *Ball Homes Factory Lane*

East/West Street: *Factory Lane* | North/South Street: *Old Henry Road*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*116*	*247*	*0*	*0*	*290*	*362*
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*0*	*0*	*0*	*193*	*0*	*39*
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	*LT*		*TR*				*LR*	
PHF	*0.96*		*0.96*				*0.96*	
Flow Rate (veh/h)	*377*		*679*				*241*	
% Heavy Vehicles	*1*		*1*				*1*	
No. Lanes	*1*		*1*		*0*		*1*	
Geometry Group	*1*		*1*				*1*	
Duration, T	*0.25*							

Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
Prop. Left-Turns	*0.3*		*0.0*				*0.8*	
Prop. Right-Turns	*0.0*		*0.6*				*0.2*	
Prop. Heavy Vehicle	*0.0*		*0.0*				*0.0*	
hLT-adj	*0.2*	*0.2*	*0.2*	*0.2*			*0.2*	*0.2*
hRT-adj	*-0.6*	*-0.6*	*-0.6*	*-0.6*			*-0.6*	*-0.6*
hHV-adj	*1.7*	*1.7*	*1.7*	*1.7*			*1.7*	*1.7*
hadj, computed	*0.1*		*-0.3*				*0.1*	

Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
hd, initial value (s)	*3.20*		*3.20*				*3.20*	
x, initial	*0.34*		*0.60*				*0.21*	
hd, final value (s)	*5.83*		*5.08*				*6.63*	
x, final value	*0.61*		*0.96*				*0.44*	
Move-up time, m (s)	*2.0*		*2.0*				*2.0*	
Service Time, t_s (s)	*3.8*		*3.1*				*4.6*	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	*603*		*707*				*491*	
Delay (s/veh)	*17.56*		*46.20*				*14.82*	
LOS	*C*		*E*				*B*	
Approach: Delay (s/veh)	*17.56*		*46.20*				*14.82*	
LOS	*C*		*E*				*B*	
Intersection Delay (s/veh)	*32.04*							
Intersection LOS	*D*							

HCS+™ Version 5.3 Generated: 7/21/2015 12:17 PM

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jaccobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2022 No Build*
Analysis Time Period	*PM Peak*		

Project Description	*Ball Homes Factory Lane*
East/West Street: *Factory Lane*	North/South Street: *Old Henry Road*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*341*	*544*			*290*	*46*
Peak-Hour Factor, PHF	*0.96*	*0.96*	*1.00*	*1.00*	*0.96*	*0.96*
Hourly Flow Rate, HFR (veh/h)	*355*	*566*	*0*	*0*	*302*	*47*
Percent Heavy Vehicles	*1*	--	--	*0*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*0*
Configuration	*L*	*T*				*TR*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*136*		*290*			
Peak-Hour Factor, PHF	*0.96*	*1.00*	*0.96*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*141*	*0*	*302*	*0*	*0*	*0*
Percent Heavy Vehicles	*1*	*0*	*1*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*					*L*		*R*
v (veh/h)	*355*					*141*		*302*
C (m) (veh/h)	*1215*					*157*		*718*
v/c	*0.29*					*0.90*		*0.42*
95% queue length	*1.22*					*6.34*		*2.09*
Control Delay (s/veh)	*9.2*					*104.0*		*13.6*
LOS	*A*					*F*		*B*
Approach Delay (s/veh)	--	--				*42.4*		
Approach LOS	--	--				*E*		

HCS+™ Version 5.6 Generated: 7/21/2015 12:29 PM

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jaccobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2022 Build*
Analysis Time Period	*PM Peak*		

Project Description	*Ball Homes Factory Lane*
East/West Street: *Factory Lane*	North/South Street: *Old Henry Road*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*431*	*544*			*290*	*46*
Peak-Hour Factor, PHF	*0.96*	*0.96*	*1.00*	*1.00*	*0.96*	*0.96*
Hourly Flow Rate, HFR (veh/h)	*448*	*566*	*0*	*0*	*302*	*47*
Percent Heavy Vehicles	*1*	--	--	*0*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*0*
Configuration	*L*	*T*				*TR*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*136*		*341*			
Peak-Hour Factor, PHF	*0.96*	*1.00*	*0.96*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*141*	*0*	*355*	*0*	*0*	*0*
Percent Heavy Vehicles	*1*	*0*	*1*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*					*L*		*R*
v (veh/h)	*448*					*141*		*355*
C (m) (veh/h)	*1215*					*116*		*718*
v/c	*0.37*					*1.22*		*0.49*
95% queue length	*1.72*					*9.00*		*2.77*
Control Delay (s/veh)	*9.7*					*223.5*		*14.8*
LOS	*A*					*F*		*B*
Approach Delay (s/veh)	--	--				*74.2*		
Approach LOS	--	--				*F*		

HCS+™ Version 5.6 Generated: 7/21/2015 12:31 PM

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jacobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2015*
Analysis Time Period	*AM Peak*		

Project Description	*Ball Homes Factory Lane*
East/West Street:	*Hamilton Springs/Arnold Palmer*
North/South Street:	*Old Henry Road*
Intersection Orientation:	*North-South*
Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*0*	*148*	*27*	*25*	*613*	*0*
Peak-Hour Factor, PHF	*0.98*	*0.98*	*0.98*	*0.98*	*0.98*	*0.98*
Hourly Flow Rate, HFR (veh/h)	*0*	*151*	*27*	*25*	*625*	*0*
Percent Heavy Vehicles	*0*	--	--	*1*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*1*	*0*	*1*	*0*
Configuration	*LT*		*R*	*LTR*		
Upstream Signal		*1*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*0*	*0*	*3*	*117*	*0*	*20*
Peak-Hour Factor, PHF	*0.98*	*0.98*	*0.98*	*0.98*	*0.98*	*0.98*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*3*	*119*	*0*	*20*
Percent Heavy Vehicles	*0*	*0*	*0*	*1*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*	*LTR*		*LTR*			*LTR*	
v (veh/h)	*0*	*25*		*139*			*3*	
C (m) (veh/h)	*966*	*1405*		*315*			*488*	
v/c	*0.00*	*0.02*		*0.44*			*0.01*	
95% queue length	*0.00*	*0.05*		*2.16*			*0.02*	
Control Delay (s/veh)	*8.7*	*7.6*		*25.2*			*12.4*	
LOS	*A*	*A*		*D*			*B*	
Approach Delay (s/veh)	--	--	*25.2*			*12.4*		
Approach LOS	--	--	*D*			*B*		

HCS+™ Version 5.6

Generated: 7/21/2015 11:53 AM

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jacobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2022*
Analysis Time Period	*AM Peak*		

Project Description	*Ball Homes Factory Lane*
East/West Street: *Hamilton Springs/Arnold Palmer*	North/South Street: *Old Henry Road*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*8*	*226*	*27*	*25*	*886*	*2*
Peak-Hour Factor, PHF	*0.98*	*0.98*	*0.98*	*0.98*	*0.98*	*0.98*
Hourly Flow Rate, HFR (veh/h)	*8*	*230*	*27*	*25*	*904*	*2*
Percent Heavy Vehicles	*0*	--	--	*1*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*1*	*1*	*0*
Configuration	*L*		*TR*	*L*		*TR*
Upstream Signal		*1*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*2*	*0*	*38*	*117*	*0*	*20*
Peak-Hour Factor, PHF	*0.98*	*0.98*	*0.98*	*0.98*	*0.98*	*0.98*
Hourly Flow Rate, HFR (veh/h)	*2*	*0*	*38*	*119*	*0*	*20*
Percent Heavy Vehicles	*0*	*0*	*0*	*1*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*		*LTR*			*LTR*	
v (veh/h)	*8*	*25*		*139*			*40*	
C (m) (veh/h)	*759*	*1318*		*241*			*332*	
v/c	*0.01*	*0.02*		*0.58*			*0.12*	
95% queue length	*0.03*	*0.06*		*3.26*			*0.41*	
Control Delay (s/veh)	*9.8*	*7.8*		*38.5*			*17.3*	
LOS	*A*	*A*		*E*			*C*	
Approach Delay (s/veh)	--	--	*38.5*			*17.3*		
Approach LOS	--	--	*E*			*C*		

HCS+™ Version 5.6

Generated: 7/21/2015 11:59 AM

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jacobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2022 Build*
Analysis Time Period	*AM Peak*		

Project Description	*Ball Homes Factory Lane*
East/West Street:	*Hamilton Springs/Arnold Palmer*
Intersection Orientation:	*North-South*
North/South Street:	*Old Henry Road*
Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*8*	*252*	*27*	*25*	*972*	*2*
Peak-Hour Factor, PHF	*0.98*	*0.98*	*0.98*	*0.98*	*0.98*	*0.98*
Hourly Flow Rate, HFR (veh/h)	*8*	*257*	*27*	*25*	*991*	*2*
Percent Heavy Vehicles	*0*	--	--	*1*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*1*	*1*	*0*
Configuration	*L*		*TR*	*L*		*TR*
Upstream Signal		*1*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*2*	*0*	*38*	*117*	*0*	*20*
Peak-Hour Factor, PHF	*0.98*	*0.98*	*0.98*	*0.98*	*0.98*	*0.98*
Hourly Flow Rate, HFR (veh/h)	*2*	*0*	*38*	*119*	*0*	*20*
Percent Heavy Vehicles	*0*	*0*	*0*	*1*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*		*LTR*			*LTR*	
v (veh/h)	*8*	*25*		*139*			*40*	
C (m) (veh/h)	*704*	*1288*		*211*			*296*	
v/c	*0.01*	*0.02*		*0.66*			*0.14*	
95% queue length	*0.03*	*0.06*		*4.01*			*0.46*	
Control Delay (s/veh)	*10.2*	*7.9*		*49.9*			*19.1*	
LOS	*B*	*A*		*E*			*C*	
Approach Delay (s/veh)	--	--	*49.9*			*19.1*		
Approach LOS	--	--	*E*			*C*		

HCS+™ Version 5.6 Generated: 7/21/2015 12:01 PM

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jacobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2015*
Analysis Time Period	*PM Peak*		

Project Description	*Ball Homes Factory Lane*
East/West Street:	*Hamilton Springs/Arnold Palmer*
North/South Street:	*Old Henry Road*
Intersection Orientation:	*North-South*
Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*3*	*631*	*82*	*35*	*284*	*1*
Peak-Hour Factor, PHF	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*
Hourly Flow Rate, HFR (veh/h)	*3*	*678*	*88*	*37*	*305*	*1*
Percent Heavy Vehicles	*0*	--	--	*1*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*1*	*0*	*1*	*0*
Configuration	*LT*		*R*	*LTR*		
Upstream Signal		*1*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*0*	*0*	*4*	*61*	*0*	*27*
Peak-Hour Factor, PHF	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*4*	*65*	*0*	*29*
Percent Heavy Vehicles	*0*	*0*	*0*	*1*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*	*LTR*		*LTR*			*LTR*	
v (veh/h)	*3*	*37*		*94*			*4*	
C (m) (veh/h)	*1266*	*776*		*223*			*739*	
v/c	*0.00*	*0.05*		*0.42*			*0.01*	
95% queue length	*0.01*	*0.15*		*1.95*			*0.02*	
Control Delay (s/veh)	*7.9*	*9.9*		*32.4*			*9.9*	
LOS	*A*	*A*		*D*			*A*	
Approach Delay (s/veh)	--	--	*32.4*			*9.9*		
Approach LOS	--	--	*D*			*A*		

HCS+™ Version 5.6

Generated: 7/21/2015 12:06 PM

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jacobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2022 No Build*
Analysis Time Period	*PM Peak*		

Project Description	*Ball Homes Factory Lane*
East/West Street:	*Hamilton Springs/Arnold Palmer*
Intersection Orientation:	*North-South*
North/South Street:	*Old Henry Road*
Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*37*	*863*	*82*	*35*	*422*	*3*
Peak-Hour Factor, PHF	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*
Hourly Flow Rate, HFR (veh/h)	*39*	*927*	*88*	*37*	*453*	*3*
Percent Heavy Vehicles	*0*	--	--	*1*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*1*	*1*	*0*
Configuration	*L*		*TR*	*L*		*TR*
Upstream Signal		*1*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*1*	*0*	*21*	*61*	*0*	*27*
Peak-Hour Factor, PHF	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*
Hourly Flow Rate, HFR (veh/h)	*1*	*0*	*22*	*65*	*0*	*29*
Percent Heavy Vehicles	*0*	*0*	*0*	*1*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*		*LTR*			*LTR*	
v (veh/h)	*39*	*37*		*94*			*23*	
C (m) (veh/h)	*1115*	*535*		*182*			*524*	
v/c	*0.03*	*0.07*		*0.52*			*0.04*	
95% queue length	*0.11*	*0.22*		*2.59*			*0.14*	
Control Delay (s/veh)	*8.3*	*12.2*		*44.2*			*12.2*	
LOS	*A*	*B*		*E*			*B*	
Approach Delay (s/veh)	--	--	*44.2*			*12.2*		
Approach LOS	--	--	*E*			*B*		

HCS+™ Version 5.3

Generated: 7/21/2015 12:09 PM

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*D Zimmerman*	Intersection	
Agency/Co.	*Jacobs*	Jurisdiction	
Date Performed	*7/21/2015*	Analysis Year	*2022 Build*
Analysis Time Period	*PM Peak*		

Project Description	*Ball Homes Factory Lane*
East/West Street:	*Hamilton Springs/Arnold Palmer*
North/South Street:	*Old Henry Road*
Intersection Orientation:	*North-South*
Study Period (hrs):	*0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*37*	*953*	*82*	*35*	*473*	*3*
Peak-Hour Factor, PHF	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*
Hourly Flow Rate, HFR (veh/h)	*39*	*1024*	*88*	*37*	*508*	*3*
Percent Heavy Vehicles	*0*	--	--	*1*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*1*	*1*	*0*	*1*	*1*	*0*
Configuration	*L*		*TR*	*L*		*TR*
Upstream Signal		*1*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*1*	*0*	*21*	*61*	*0*	*27*
Peak-Hour Factor, PHF	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*
Hourly Flow Rate, HFR (veh/h)	*1*	*0*	*22*	*65*	*0*	*29*
Percent Heavy Vehicles	*0*	*0*	*0*	*1*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

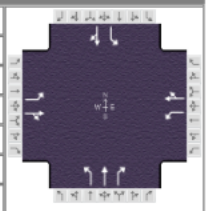
Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*		*LTR*			*LTR*	
v (veh/h)	*39*	*37*		*94*			*23*	
C (m) (veh/h)	*1065*	*462*		*148*			*467*	
v/c	*0.04*	*0.08*		*0.64*			*0.05*	
95% queue length	*0.11*	*0.26*		*3.45*			*0.15*	
Control Delay (s/veh)	*8.5*	*13.5*		*64.2*			*13.1*	
LOS	*A*	*B*		*F*			*B*	
Approach Delay (s/veh)	--	--	*64.2*			*13.1*		
Approach LOS	--	--	*F*			*B*		

HCS+™ Version 5.3

Generated: 7/21/2015 12:11 PM

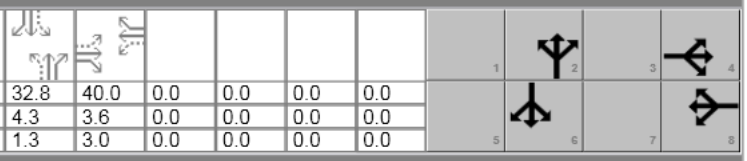
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Jacobs			Duration, h	0.25
Analyst	D Zimmerman	Analysis Date	Jul 21, 2015	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.99
Intersection	Bush Farm Road	Analysis Year	2015	Analysis Period	1> 7:30
File Name	Old Henry at Bush 15 AM.xus				
Project Description	Ball Homes Factory Lane				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	3	5	72	615	4	37	7	115	138	69	604	1

Signal Information			
Cycle, s	85.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



	EB		WB		NB			
Green	32.8	40.0	0.0	0.0	0.0	0.0		
Yellow	4.3	3.6	0.0	0.0	0.0	0.0		
Red	1.3	3.0	0.0	0.0	0.0	0.0		

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		6.0		5.0		6.0
Phase Duration, s		46.6		46.6		38.4		38.4
Change Period, (*Y*+*Rc*), s		6.6		6.6		5.6		5.6
Max Allow Headway (*MAH*), s		4.8		4.8		5.0		5.0
Queue Clearance Time (g_s), s		42.0		42.0		27.8		27.1
Green Extension Time (g_e), s		0.0		0.0		4.9		5.0
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		1.00		1.00		0.17		0.15

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	3	78		621	41		7	116	79	70	611	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1387	1610		1329	1618		823	1863	1579	1283	1881	
Queue Service Time (g_s), s	0.0	2.3		37.7	1.2		0.7	3.5	2.7	3.2	25.1	
Cycle Queue Clearance Time (g_c), s	40.0	2.3		40.0	1.2		25.8	3.5	2.7	6.7	25.1	
Green Ratio (*g*/*C*)	0.47	0.47		0.47	0.47		0.39	0.39	0.39	0.39	0.39	
Capacity (*c*), veh/h	85	758		675	762		159	719	609	527	725	
Volume-to-Capacity Ratio (*X*)	0.036	0.103		0.921	0.054		0.045	0.162	0.129	0.132	0.842	
Available Capacity (c_a), veh/h	85	758		675	762		277	986	836	712	996	
Back of Queue (*Q*), veh/ln (50th percentile)	0.1	0.8		15.1	0.4		0.1	1.4	0.9	0.9	11.0	
Queue Storage Ratio (*RQ*) (50th percentile)	0.01	0.04		0.76	0.01		0.02	0.04	0.02	0.23	0.28	
Uniform Delay (d_1), s/veh	42.5	12.5		24.6	12.2		35.5	17.1	16.9	19.3	23.7	
Incremental Delay (d_2), s/veh	0.2	0.1		18.2	0.0		0.2	0.1	0.1	0.2	5.7	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (*d*), s/veh	42.7	12.6		42.7	12.3		35.7	17.2	17.0	19.5	29.5	
Level of Service (LOS)	D	B		D	B		D	B	B	B	C	
Approach Delay, s/veh / LOS	13.7	B		40.8	D		17.8	B		28.4	C	
Intersection Delay, s/veh / LOS	31.4						C					

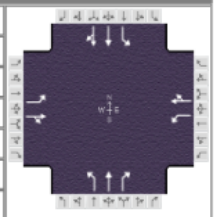
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.5	B	2.3	B	2.3	B	2.3	B
Bicycle LOS Score / LOS	0.6	A	1.6	A	0.8	A	1.6	A

HCS 2010™ Streets Version 6.65

Generated: 7/21/2015 10:36:35 AM

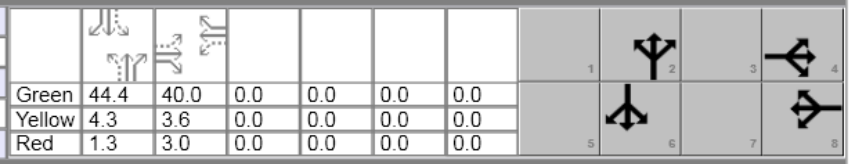
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Jacobs			Duration, h	0.25
Analyst	D Zimmerman	Analysis Date	Jul 21, 2015	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.99
Intersection	Bush Farm Road	Analysis Year	2022 No Build	Analysis Period	1> 7:30
File Name	Old Henry at Bush 22 AM NB.xus				
Project Description	Ball Homes Factory Lane				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	15	10	104	742	37	52	171	174	235	129	804	50

Signal Information			
Cycle, s	96.6	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



	EB		WB		NB		SB	
Green	44.4	40.0	0.0	0.0	0.0	0.0		
Yellow	4.3	3.6	0.0	0.0	0.0	0.0		
Red	1.3	3.0	0.0	0.0	0.0	0.0		

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		6.0		5.0		6.0
Phase Duration, s		46.6		46.6		50.0		50.0
Change Period, (*Y*+*Rc*), s		6.6		6.6		5.6		5.6
Max Allow Headway (*MAH*), s		4.8		4.8		5.3		5.3
Queue Clearance Time (g_s), s		42.0		42.0		42.3		17.7
Green Extension Time (g_e), s		0.0		0.0		2.1		11.7
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		1.00		1.00		1.00		0.31

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	15	115		749	90		173	176	177	130	436	427
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1328	1616		1285	1702		651	1863	1579	1216	1881	1842
Queue Service Time (g_s), s	0.0	4.3		35.7	3.2		24.5	5.4	6.6	6.9	15.7	15.7
Cycle Queue Clearance Time (g_c), s	40.0	4.3		40.0	3.2		40.3	5.4	6.6	12.4	15.7	15.7
Green Ratio (*g*/*C*)	0.41	0.41		0.41	0.41		0.46	0.46	0.46	0.46	0.46	0.46
Capacity (*c*), veh/h	75	669		549	705		268	856	725	565	864	846
Volume-to-Capacity Ratio (*X*)	0.203	0.172		1.365	0.127		0.646	0.205	0.244	0.231	0.504	0.504
Available Capacity (c_a), veh/h	75	669		549	705		272	868	736	573	877	858
Back of Queue (*Q*), veh/ln (50th percentile)	0.4	1.6		39.8	1.2		4.0	2.2	2.2	1.9	6.3	6.2
Queue Storage Ratio (*RQ*) (50th percentile)	0.05	0.08		2.01	0.03		0.50	0.05	0.06	0.47	0.16	0.16
Uniform Delay (d_1), s/veh	48.3	17.8		32.9	17.5		32.5	15.6	15.9	19.3	18.4	18.4
Incremental Delay (d_2), s/veh	1.6	0.1		175.8	0.1		5.9	0.2	0.2	0.3	0.7	0.7
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	49.9	18.0		208.7	17.6		38.4	15.7	16.1	19.6	19.0	19.0
Level of Service (LOS)	D	B		F	B		D	B	B	B	B	B
Approach Delay, s/veh / LOS	21.7	C		188.2	F		23.3	C		19.1	B	
Intersection Delay, s/veh / LOS	77.2						E					

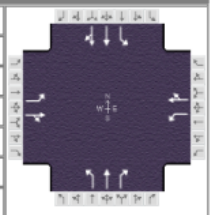
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.4	B	2.3	B	2.3	B
Bicycle LOS Score / LOS	0.7	A	1.9	A	1.4	A	1.3	A

HCS 2010™ Streets Version 6.65

Generated: 7/21/2015 10:36:35 AM

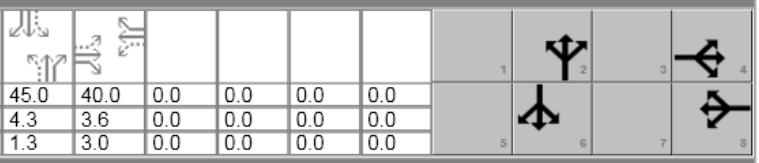
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Jacobs			Duration, h	0.25
Analyst	D Zimmerman	Analysis Date	Jul 21, 2015	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.99
Intersection	Bush Farm Road	Analysis Year	2022 Build	Analysis Period	1> 7:30
File Name	Old Henry at Bush 22 AM B.xus				
Project Description	Ball Homes Factory Lane				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	15	10	104	742	37	52	171	200	235	129	890	50

Signal Information			
Cycle, s	97.2	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



	EB		WB		NB		SB	
Green	45.0	40.0	0.0	0.0	0.0	0.0		
Yellow	4.3	3.6	0.0	0.0	0.0	0.0		
Red	1.3	3.0	0.0	0.0	0.0	0.0		

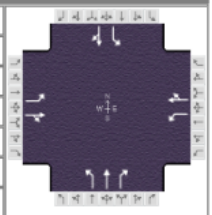
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		6.0		5.0		6.0
Phase Duration, s		46.6		46.6		50.6		50.6
Change Period, (*Y*+*Rc*), s		6.6		6.6		5.6		5.6
Max Allow Headway (*MAH*), s		4.8		4.8		5.4		5.4
Queue Clearance Time (g_s), s		42.0		42.0		47.0		19.8
Green Extension Time (g_e), s		0.0		0.0		0.0		12.4
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		1.00		1.00		1.00		0.41

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	15	115		749	90		173	202	177	130	479	470
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1328	1616		1285	1702		600	1863	1579	1187	1881	1846
Queue Service Time (g_s), s	0.0	4.4		35.6	3.2		27.2	6.3	6.6	7.2	17.8	17.8
Cycle Queue Clearance Time (g_c), s	40.0	4.4		40.0	3.2		45.0	6.3	6.6	13.6	17.8	17.8
Green Ratio (*g*/*C*)	0.41	0.41		0.41	0.41		0.46	0.46	0.46	0.46	0.46	0.46
Capacity (*c*), veh/h	74	665		545	700		242	862	731	546	871	854
Volume-to-Capacity Ratio (*X*)	0.204	0.173		1.376	0.128		0.715	0.234	0.242	0.239	0.550	0.550
Available Capacity (c_a), veh/h	74	665		545	700		242	862	731	546	871	854
Back of Queue (*Q*), veh/ln (50th percentile)	0.4	1.6		40.3	1.2		4.6	2.5	2.2	1.9	7.3	7.1
Queue Storage Ratio (*RQ*) (50th percentile)	0.05	0.08		2.03	0.03		0.57	0.06	0.06	0.48	0.18	0.18
Uniform Delay (d_1), s/veh	48.6	18.1		33.2	17.8		35.4	15.7	15.8	19.8	18.8	18.8
Incremental Delay (d_2), s/veh	1.6	0.1		180.5	0.1		10.4	0.2	0.2	0.3	1.0	1.0
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	50.2	18.3		213.7	17.9		45.9	15.9	16.0	20.1	19.8	19.8
Level of Service (LOS)	D	B		F	B		D	B	B	C	B	B
Approach Delay, s/veh / LOS	22.0	C		192.7	F		25.3	C		19.8	B	
Intersection Delay, s/veh / LOS	76.9						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.4	B	2.3	B	2.3	B
Bicycle LOS Score / LOS	0.7	A	1.9	A	1.4	A	1.4	A

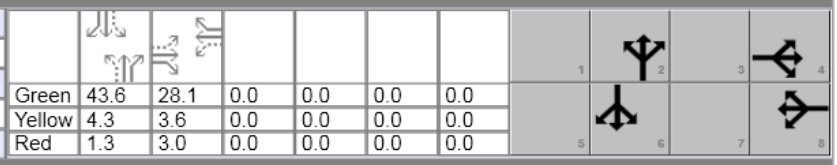
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Jacobs			Duration, h	0.25
Analyst	D Zimmerman	Analysis Date	Jul 21, 2015	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.93
Intersection	Bush Farm Road	Analysis Year	2015	Analysis Period	1> 5:00
File Name	Old Henry at Bush 15 PM.xus				
Project Description	Ball Homes Factory Lane				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	4	11	38	351	5	65	60	696	552	83	338	9

Signal Information			
Cycle, s	83.9	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



	EB			WB			NB			SB		
Green	43.6	28.1		0.0	0.0	0.0	0.0					
Yellow	4.3	3.6		0.0	0.0	0.0	0.0					
Red	1.3	3.0		0.0	0.0	0.0	0.0					

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		6.0		5.0		6.0
Phase Duration, s		34.7		34.7		49.2		49.2
Change Period, (*Y*+*Rc*), s		6.6		6.6		5.6		5.6
Max Allow Headway (*MAH*), s		4.7		4.7		5.2		5.2
Queue Clearance Time (g_s), s		4.9		26.0		29.1		38.8
Green Extension Time (g_e), s		2.7		2.1		10.3		4.9
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.00		0.06		0.68		0.96

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	4	53		377	75		65	748	529	89	373	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1345	1651		1359	1612		1025	1863	1579	717	1872	
Queue Service Time (g_s), s	0.2	1.8		22.1	2.7		3.4	27.1	20.3	9.6	10.0	
Cycle Queue Clearance Time (g_c), s	2.9	1.8		24.0	2.7		13.5	27.1	20.3	36.8	10.0	
Green Ratio (*g*/*C*)	0.34	0.34		0.34	0.34		0.52	0.52	0.52	0.52	0.52	
Capacity (*c*), veh/h	494	554		512	541		495	967	820	226	972	
Volume-to-Capacity Ratio (*X*)	0.009	0.095		0.737	0.139		0.130	0.774	0.645	0.395	0.384	
Available Capacity (c_a), veh/h	683	786		704	768		512	998	846	238	1004	
Back of Queue (*Q*), veh/ln (50th percentile)	0.1	0.7		7.2	1.0		0.7	10.6	6.5	1.6	3.7	
Queue Storage Ratio (*RQ*) (50th percentile)	0.01	0.03		0.36	0.03		0.09	0.27	0.17	0.41	0.09	
Uniform Delay (d_1), s/veh	20.4	19.1		27.4	19.4		16.2	16.2	14.6	31.0	12.1	
Incremental Delay (d_2), s/veh	0.0	0.1		3.0	0.1		0.2	4.0	1.9	1.6	0.4	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (*d*), s/veh	20.5	19.2		30.4	19.6		16.4	20.2	16.5	32.6	12.5	
Level of Service (LOS)	C	B		C	B		B	C	B	C	B	
Approach Delay, s/veh / LOS	19.3	B		28.6	C		18.6	B		16.4	B	
Intersection Delay, s/veh / LOS	20.1						C					

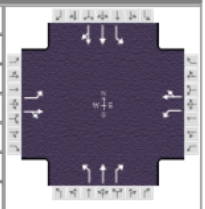
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.5	B	2.3	B	2.2	B	2.2	B
Bicycle LOS Score / LOS	0.6	A	1.2	A	2.7	B	1.3	A

HCS 2010™ Streets Version 6.65

Generated: 7/21/2015 11:33:10 AM

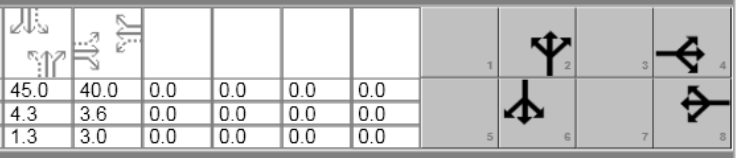
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Jacobs			Duration, h	0.25
Analyst	D Zimmerman	Analysis Date	Jul 21, 2015	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.93
Intersection	Bush Farm Road	Analysis Year	2022 No Build	Analysis Period	1> 5:00
File Name	Old Henry at Bush 22 PM NB.xus				
Project Description	Ball Homes Factory Lane				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	74	40	225	632	12	125	97	832	624	106	460	19

Signal Information			
Cycle, s	97.2	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	45.0	40.0	0.0	0.0	0.0	0.0						
Yellow	4.3	3.6	0.0	0.0	0.0	0.0						
Red	1.3	3.0	0.0	0.0	0.0	0.0						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		6.0		5.0		6.0
Phase Duration, s		46.6		46.6		50.6		50.6
Change Period, (*Y*+*Rc*), s		6.6		6.6		5.6		5.6
Max Allow Headway (*MAH*), s		5.1		5.1		5.2		5.2
Queue Clearance Time (g_s), s		14.1		42.0		47.0		47.0
Green Extension Time (g_e), s		8.5		0.0		0.0		0.0
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.16		1.00		1.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	80	285		680	147		104	895	606	114	259	256
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1260	1632		1101	1616		900	1863	1579	626	1881	1855
Queue Service Time (g_s), s	4.2	12.1		27.9	5.7		7.9	45.0	32.6	0.0	8.3	8.4
Cycle Queue Clearance Time (g_c), s	10.0	12.1		40.0	5.7		16.3	45.0	32.6	45.0	8.3	8.4
Green Ratio (*g*/*C*)	0.41	0.41		0.41	0.41		0.46	0.46	0.46	0.46	0.46	0.46
Capacity (*c*), veh/h	518	672		390	665		413	862	731	74	871	859
Volume-to-Capacity Ratio (*X*)	0.154	0.424		1.743	0.222		0.252	1.037	0.830	1.539	0.297	0.298
Available Capacity (c_a), veh/h	518	672		390	665		413	862	731	74	871	859
Back of Queue (*Q*), veh/ln (50th percentile)	1.2	4.5		46.7	2.1		1.6	27.3	12.4	7.9	3.3	3.3
Queue Storage Ratio (*RQ*) (50th percentile)	0.16	0.23		2.35	0.05		0.20	0.69	0.32	1.99	0.08	0.08
Uniform Delay (d_1), s/veh	21.7	20.4		37.3	18.5		21.3	26.1	22.8	48.6	16.3	16.3
Incremental Delay (d_2), s/veh	0.2	0.5		344.7	0.2		0.5	40.7	8.3	298.7	0.3	0.3
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	21.9	20.9		382.0	18.7		21.8	66.8	31.0	347.3	16.5	16.5
Level of Service (LOS)	C	C		F	B		C	F	C	F	B	B
Approach Delay, s/veh / LOS	21.1	C		317.3	F		50.4	D		76.5	E	
Intersection Delay, s/veh / LOS	116.5						F					

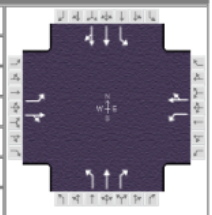
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.4	B	2.3	B	2.3	B
Bicycle LOS Score / LOS	1.1	A	1.9	A	3.1	C	1.0	A

HCS 2010™ Streets Version 6.65

Generated: 7/21/2015 11:41:48 AM

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Jacobs			Duration, h	0.25
Analyst	D Zimmerman	Analysis Date	Jul 21, 2015	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.93
Intersection	Bush Farm Road	Analysis Year	2022 Build	Analysis Period	1> 5:00
File Name	Old Henry at Bush 22 PM B.xus				
Project Description	Ball Homes Factory Lane				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	74	40	225	632	12	125	97	922	624	106	511	19

Signal Information					EB			WB			NB			SB		
Cycle, s	97.2	Reference Phase	2		L	T	R	L	T	R	L	T	R	L	T	R
Offset, s	0	Reference Point	End	Green	45.0	40.0		0.0	0.0	0.0	0.0					
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.3	3.6		0.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.3	3.0		0.0	0.0	0.0	0.0					

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		6.0		5.0		6.0
Phase Duration, s		46.6		46.6		50.6		50.6
Change Period, (*Y*+*Rc*), s		6.6		6.6		5.6		5.6
Max Allow Headway (*MAH*), s		5.1		5.1		5.2		5.2
Queue Clearance Time (g_s), s		14.1		42.0		47.0		47.0
Green Extension Time (g_e), s		8.5		0.0		0.0		0.0
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.16		1.00		1.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	80	285		680	147		104	991	606	114	286	283
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1260	1632		1101	1616		855	1863	1579	571	1881	1857
Queue Service Time (g_s), s	4.2	12.1		27.9	5.7		8.6	45.0	32.6	0.0	9.4	9.4
Cycle Queue Clearance Time (g_c), s	10.0	12.1		40.0	5.7		18.0	45.0	32.6	45.0	9.4	9.4
Green Ratio (*g*/*C*)	0.41	0.41		0.41	0.41		0.46	0.46	0.46	0.46	0.46	0.46
Capacity (*c*), veh/h	518	672		390	665		387	862	731	74	871	860
Volume-to-Capacity Ratio (*X*)	0.154	0.424		1.743	0.222		0.269	1.150	0.830	1.539	0.329	0.330
Available Capacity (c_a), veh/h	518	672		390	665		387	862	731	74	871	860
Back of Queue (*Q*), veh/ln (50th percentile)	1.2	4.5		46.7	2.1		1.7	36.9	12.4	7.9	3.8	3.7
Queue Storage Ratio (*RQ*) (50th percentile)	0.16	0.23		2.35	0.05		0.21	0.94	0.32	1.99	0.09	0.09
Uniform Delay (d_1), s/veh	21.7	20.4		37.3	18.5		22.2	26.1	22.8	48.6	16.5	16.5
Incremental Delay (d_2), s/veh	0.2	0.5		344.7	0.2		0.5	80.7	8.3	298.7	0.3	0.3
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	21.9	20.9		382.0	18.7		22.8	106.8	31.0	347.3	16.8	16.9
Level of Service (LOS)	C	C		F	B		C	F	C	F	B	B
Approach Delay, s/veh / LOS	21.1	C		317.3	F		74.7	E		71.9	E	
Intersection Delay, s/veh / LOS	124.8						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.4	B	2.3	B	2.3	B
Bicycle LOS Score / LOS	1.1	A	1.9	A	3.3	C	1.1	A

Tab 10
Statutory/Case Law regarding contents of subdivision regulations and review of subdivisions

KRS § 100.281 – Contents of subdivision regulations

- Subdivision regulations shall be based on the comprehensive plan, in those counties which have adopted a comprehensive plan, and all subdivision regulations shall contain:

(1) The procedure for the submission and approval of preliminary and final plat and the recordation of final plats. The commission may delegate to its secretary or any other officer or employee the power to approve plats in accordance with the commission's adopted requirements, but all plats, preliminary and final, shall be approved or disapproved within ninety (90) days;

- "note that an administrative agency's interpretation of its own regulations is entitled to substantial deference". Commonwealth of Kentucky, Cabinet for Health Services v. Family Home Health Care, Inc., 98 S.W.3d 524 (Ky. App. 2003) citing *Camera Center, Inc. v. Revenue Cabinet*, Ky., 34 S.W.3d 39 (2000). A reviewing court is not free to substitute its judgment as to the proper interpretation of the agency's regulations as long as that interpretation is compatible and consistent with the statute under which it was promulgated and is not otherwise defective as arbitrary or capricious.

Directory v. Advisory provisions of regulations (meaning specific standards):

- Subdivision regulations shall contain rules and regulations that constitute specific standards to be applied. Snyder v. Owensboro, 528, S.W.2d 663, 664 (Ky. 1975).

Directory v. Advisory provisions of regulations (meaning specific standards):

- As respects subdivision applications “there must be rules and regulations constituting specific standards to be applied in determining whether approval is to be granted.” Wolf Pen Preservation Ass'n, Inc. v. Louisville & Jefferson County Planning Com'n, Canfield-Knopf Properties, Inc., 942 S.W.2d 310, 312 (Ky. App. 1997).

Directory v. Advisory provisions of regulations (meaning specific standards):

- The legislative scheme must be essentially complete on its face, leaving to regulatory authority administrative rather than policy decisions. Louisville and Jefferson County Planning Commission v. Schmidt, 83 S.W.3d. 449 (Ky. 2001) (citing Diemer v. Com. Transp. Cabinet, 786 S.W.2d 861, 865 (1990), citing Holsclaw v. Stephens, Ky., 507 S.W.2d 462, 471 (1974).

Tab 11
Written justification, in addition to Conservation Plan and exhibits, demonstrating compliance with LDC Section 7.11.4.B.9 requirement

a. Describe how the existing natural features of the site are being preserved and incorporated into the layout.

The existing natural features on the site are being preserved and incorporated into the subdivision layout. There is a 200 ft perennial stream buffer area between the townhomes and the single family lots. The exiting tree mass on the west side of the property is being preserved along with preservation along the property perimeter on the north and east sides, which is approximately 42.69 acres of open space. The open space to the rear of the proposed subdivision also abuts a wooded portion of the adjoining single family neighborhood, adding to the aesthetics of the area and thus protecting neighbor properties that might involve larger subdivision lots. Over 28.5 acres of tree canopy will be preserved and most intermittent and ephemeral streams channels on site will be maintained.

This application for a conservation subdivision is located on 122 acres off Factory Lane between La Grange Road and Old Henry Road, nestled between the Forest Springs and Woodmont Subdivisions. Townhomes have been clustered towards the front of the development along Factory Lane where over 2.5 acres separate the development from Factory Lane. These will allow for a mix of residential home types in the area which already includes apartments, patio homes and single family homes.

b. Explain how clustering of dwelling units will:

i. Minimize disturbance of woodlands, wetlands, grasslands, mature trees and steep slopes

Lots have been located to preserve existing stream corridors as much as possible. Stream corridors overlap many of the wooded areas, steep slopes and wetlands on site. This is demonstrated on the accompanying "Existing Resources & Site Analysis Plan" and as described above.

ii. Prevent downstream impacts due to runoff through storm water techniques including minimizing impermeable areas, using bio swales, rain gardens, permeable pavements, small-scale, infiltration and green roofs.

Conceptual storm-water strategies include a combination of bio-swales, a green dry basin and water quality units for the treatment of storm-water runoff. Final designs will be determined at the time of construction plan approval and will meet all MSD requirements.

iii. Protect views of open land from existing adjacent roadways through practices such as orienting structures to align with topographic character of land, tucking structures behind tree lines or knolls, using vegetation as a backdrop to reduce prominence of the structures, varying setbacks, setting aside required conservation land as a visual amenity into and within the development site, or any combination of these practices.

The frontage of the property includes an open space lot with a supplemental setback of some 30' from the Factory Lane right-of-way. Backs of homes will not face Factory Lane, and the building setback will vary across this frontage.

Large open spaces flank the entrance and will allow for a landscaped signature entrance. This is demonstrated on the accompanying "Existing Resources & Site Analysis Plan" in combination with the submitted Conservation Subdivision Plan and as described above.

iv. Protect archaeological site and existing historic buildings or incorporate them through adaptive reuse.

No known archaeological features or historic structures exist on this site.

v. Avoid encroaching on sensitive areas such as rare plant communities, high quality habitats, or endangered species habitats identified by the Kentucky Department for Natural Resources.

The delineation summary report prepared by Redwing Environmental Services on November 20, 2014 indicates approximately 4 acres of suitable habitat for the federally endangered Indiana Bat. Over 28.5 acres of tree canopy is being preserved on site. No other endangered species or rare plants have been identified. This is demonstrated on the accompanying "Existing Resources & Site Analysis Plan" in combination with the submitted Conservation Subdivision Plan and as described above.

c. Explain how the design and location of buildable lots will ensure compatibility with existing adjacent development.

This is demonstrated in the PowerPoint presentation presented at the required neighborhood meeting which accompanied the application, as supplemented at this public hearing.

d. Justification must be provided for any cases where proposed open space areas within the development will not abut existing open space areas on adjoining parcels.

To the extent that open space exists on adjoining properties, open spaces shown on the submitted Conservation Subdivision Plan will connect.