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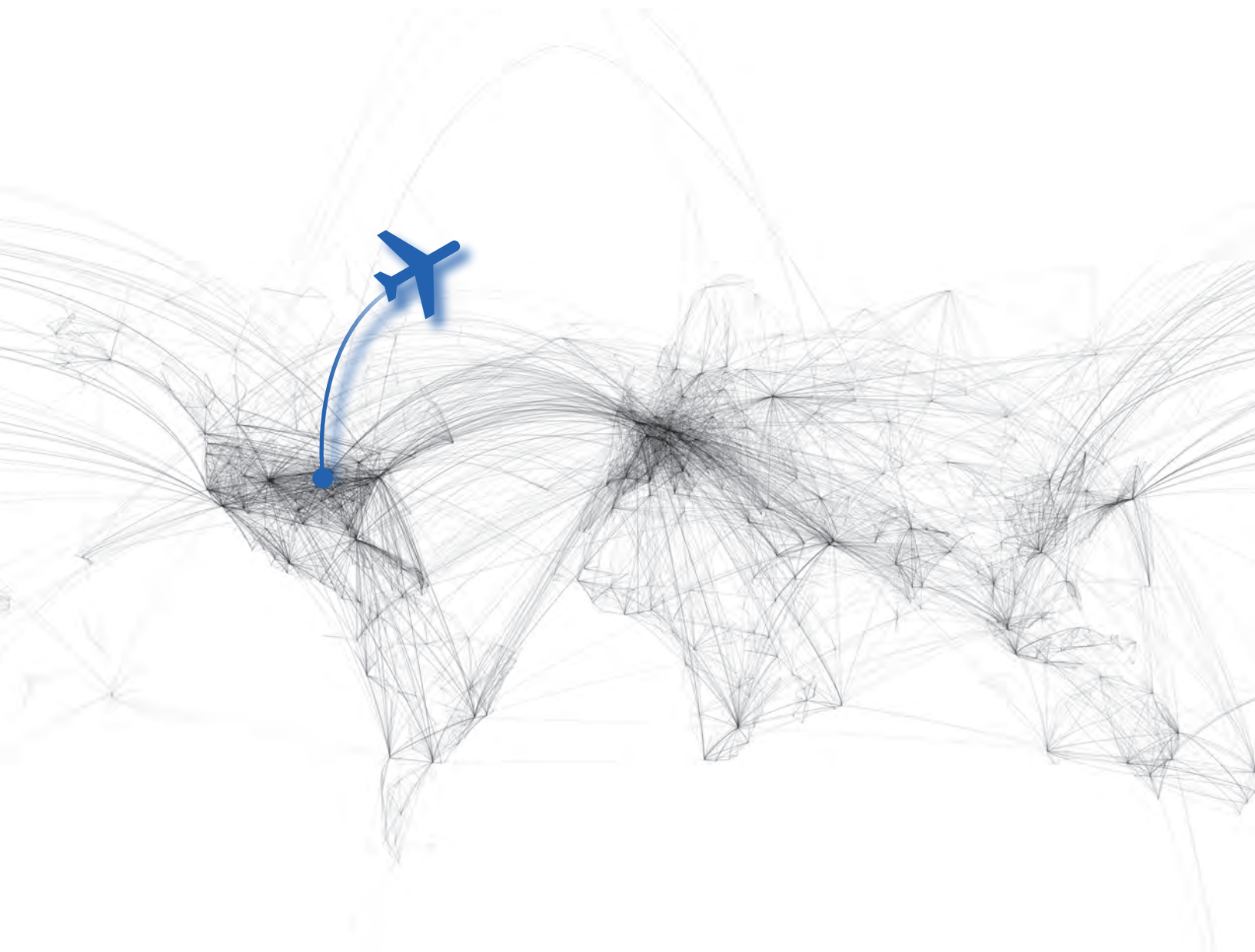
Comprehensive Economic Development Strategy



Acknowledgments

Beginning in the Spring of 2011, AECOM and the Village of Bensenville embarked on an extensive planning and economic development effort to help clarify how the Village will reposition to evolving infrastructure intitiatives, including the O'Hare Modernization Program (OMP), and the Elgin O'Hare-West Access (EOWA).

We would like to acknowledge the commitments of the following people in completing this effort:

VILLAGE STAFF

- Michael Cassady, Village Manager
- Dan Di Santo, Assistant VIllage Manager
- Joe Caracci, Director - Public Works
- Scott Viger, Director - Community & Economic Development
- Mark Rysavy, Assistant Director - Community & Economic Development
- Mike Beranek, Public Works
- Mike Martella, Marketing & Business Development
- Diana Paluch, Public Affairs Consultant

VILLAGE TRUSTEES

- Frank Soto, VIllage President
- Trustee Morris Bartlett
- Trustee Robert Jarecki
- Trustee Martin O'Connell
- Trustee Oronzo Peconio
- Trustee JoEllen Ridder
- Trustee Henry Wesseler
- Susan Janowiak, Village Clerk

STAKEHOLDERS

The AECOM team completed interviews with more than 40 stakeholders, representing public, private, and institutional interests across the community and region. These interviews were essential in framing perspectives regarding community strengths, weaknesses, threats and opportunities. Their time commitment in support of the effort is appreciated.

CONSULTANT TEAM

AECOM and its partner Carolyn Grisko & Associates committed considerable resources to the effort. Key staff assigned to the project included:

AECOM TECHNICAL SERVICES, INC.

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- Bob Butterworth
- Mike Eichton
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CAROLYN GRISKO & ASSOCIATES

- Carolyn Grisko
- Holly Dotterer
- Josh Druding

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ABBREVIATIONS

CMAP - Chicago Metropolitan Agency for Planning

CP - Canadian Pacific Railroad

CN - Canadian National Railroad

EIS - Environmental Impact Statement

EOWA - Elgin O'Hare-West Access

ICC - Illinois Commerce Commission

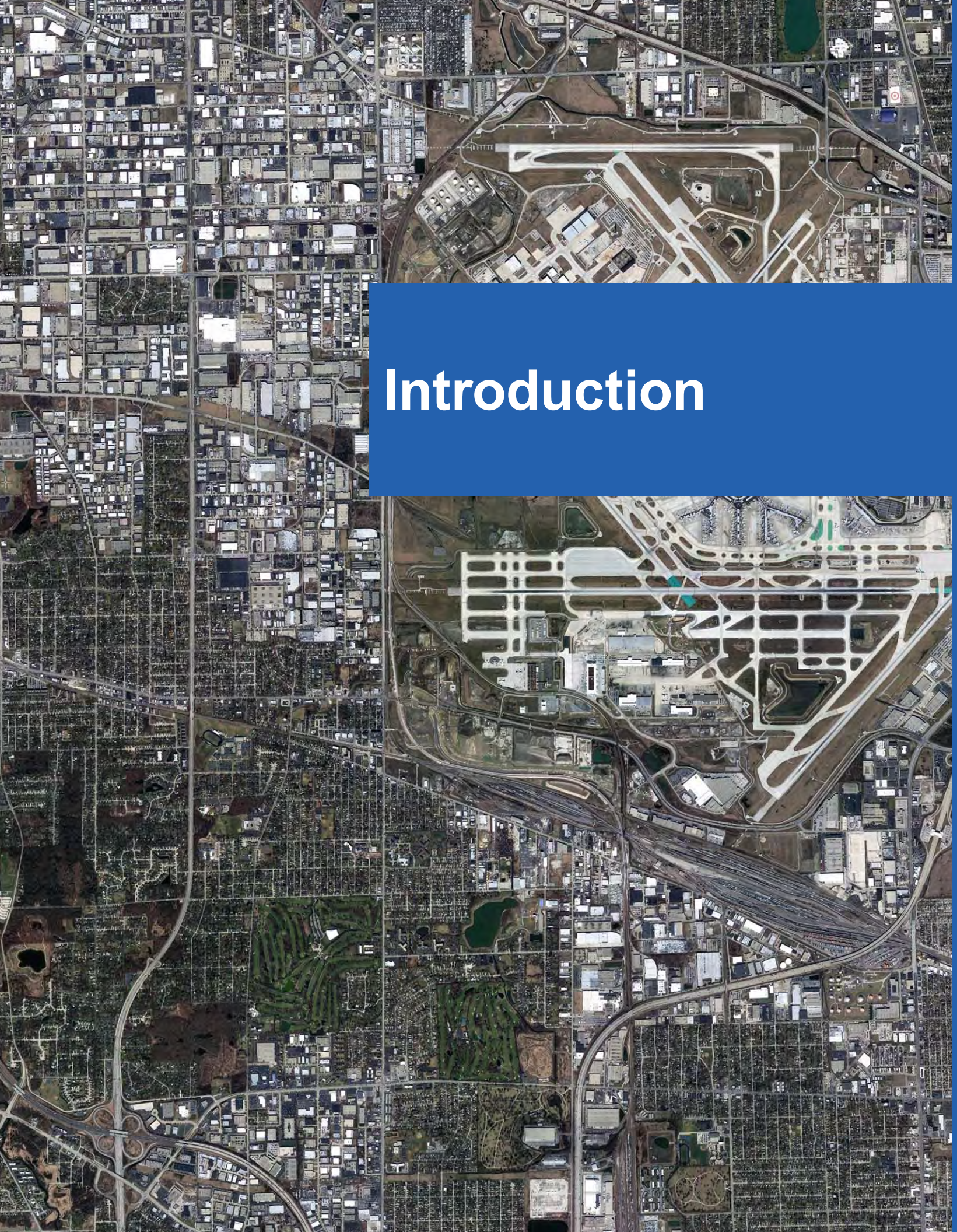
IDOT - Illinois Department of Transportation

FAA - Federal Aviation Administraton

OMP - O'Hare Modernization Program

UP - Union Pacific Railroad

Introduction



Introduction

PROLOGUE

In the Spring of 2011, the consulting team of AECOM Technical Services Inc. and Carolyn Grisko & Associates was engaged by the Village of Bensenville to complete a airport compatibility assessment, land use plan and economic development strategy. The project, known formally as the Federal Aviation Administration Airport Compatibility Study, has been focused on the following objectives:

- Identify appropriate land uses in proximity to O'Hare International Airport to avoid future conflicts, and sustain a vision for future real estate development in the Village, as pressure for land use change gradually builds.
- Assess opportunities to leverage public investments to facilitate economic growth in the Village.
- Identify strategies to implement improvements necessary to be successful in achieving desired outcomes.
- Build consensus around a flexible roadmap for Bensenville that reinvigorates its neighborhoods and upgrades its aging business districts to compete globally in the 21st century.

In practical terms, the study has evaluated how the community will respond to construction of the O'Hare Modernization Program (OMP) and the Elgin-O'Hare West Access (EOWA). Over the next 15 to 20 years, these two projects have the clear potential to generate between $3 and $6 billion in new construction investment that will unfold on the northeastern doorstep of the community.

PROJECT CONTEXT

With hindsight, it is clear that the 2003 Illinois General Assembly vote to pass the O'Hare Modernization Act laid the groundwork for a period of considerable economic hardship for the VIllage of Bensenville. The 2005 FAA Record of Decision to approve the $6-billion-dollar expansion of O'Hare International Airport then triggered immediate and practical impacts, including the loss of about 2,000 residents, 500 homes and 120 businesses, as land acquisition and demolition for the OMP began. These losses generated an immediate fiscal impact on the Village, while also initiating long-term construction-related disruptions along Irving Park Rd. and York Rd., resulting in increased congestion and delay. In this challenging context, in 2009, a new administration took office in Bensenville and made a deliberate policy shift in favor of the OMP, while also supporting plans for the Elgin O'Hare-West Access and planned Western Terminal.

It is also important to consider that the period from 2003 to 2011 saw a significant number of global factors impact Bensenville even as decisions regarding the OMP began to unfold. These factors link with:

- Long-term decline in US manufacturing employment, which impacted manufacturers around O'Hare International Airport
- Continued instability in the domestic airline industry
- Rapid economic growth in Asia, which is closely linked with growing demand for global air travel and air cargo, as well as concepts such as Aerotropolis and the Airport City.

More broadly, these factors also need to be viewed in context with the "Great Recession" which slowly began in the Midwestern US by 2007, and came to a disturbing climax in 2009 and 2010.

REGIONAL CONTEXT AND TRANSPORTATION ASSETS

Bensenville enjoys excellent access to key transportation assets in the region, including air, road, and rail modes. Key characteristics of these modes locally include the following:

- Arterial roadways, including IL Route 83 and York/ Elmhurst Roads, are critical to existing industries in the Northern and Eastern Business Districts.
- Local rail service is important for industries in the Northern Business District. Stakeholder interviews confirmed strengthening interest in rail access.
- The proximity of regional and North American rail service connections is important for area industries, generally finding means to adjust for local area rail congestion.
- Industries regularly make use of their proximity to O'Hare International Airport in scheduling deliveries and shipments of freight to meet their respective customer requirements.

- The recent transportation and industrial infrastructure upgrades in Bensenville are critical in sustaining the operations of existing manufacturing, wholesale, and distribution operations in the area.
- The EOWA will only enhance access around O'Hare International Airport, allowing considerable traffic to bypass the already congested interchange of I-90, I-294, and I-190.

SUB-AREAS

The following four sub-areas were identified for close study and recommendation in this project:

- Northern Business District
- Midtown / Irving Park Road
- Downtown
- Eastern Business District

The Northern Business District encompasses an array of commercial, light industrial and distribution business at the northern end of the Village. It is bisected by Thorndale Avenue, which is the designated right-of-way for the EOWA project.

The Midtown sub-area runs along Irving Park Road, addressing the commercial and residential contexts of this major corridor.

The Downtown sub-area includes key development opportunities in this pedestrian-friendly, transit-oriented district, supported by Metra and Pace service.

The Eastern Business District addresses the East Green Street Corridor and continues south on County Line Road, as well as the former Legends of Bensenvile nine-hole golf course, which is now available for redevelopment.

REGIONAL ACCESS ROUTES

The Village is strategically positioned with excellent access to the regional transportation network. The main regional routes providing access through the region are Interstates 90, 290, and 294. Future connections will further enhance regional access. In particular, the Northern Business District will benefit from improved access established via the future EOWA, as well as grade separations for Union Pacific and Canadian Pacific Rail lines, which should be complete by 2015.

LOCAL TRANSPORTATION NETWORK

Not only is Bensenville proximate to existing interstate highways, its local street network creates easy access to and through the Village from the expressways. Key arterials in and adjacent to the Village are York Road, IL Route 83, Thorndale Avenue, and Devon Avenue.

Other primary routes for truck and general traffic are Green Street, Irving Park Road, and Grand Avenue. Minor streets facilitating through-traffic include County Line Road, Foster Avenue, Church Road, and Jefferson Street/3rd Avenue. While many tertiary roads create internal connections, there are numerous dead-end roads within the Northern Business District in particular, which inhibit connections throughout that sub-area.

Two public meetings took place over the course of the project to solicit feedback on community stakeholders' future vision for Bensenville.

PUBLIC PROCESS AND COMMUNITY ENGAGEMENT

In January 2012, an open house was held to formally present the design alternatives for Downtown Bensenville. Over 200 stakeholders dropped in over the course of the evening to view the proposed concepts and provide input.

A second open house was held in March 2012 to review design concepts for the Northern Business District, Midtown, and the Eastern Business District.

GUIDING PRINCIPALS

- Transform the Village of Bensenville into a balanced community that encourages business opportunities, economic growth and transit oriented development.
- Position the Village of Bensenville to take advantage of its geographic position as it relates to O'Hare International Airport, the EOWA and Western Terminal.
- Strengthen the existing residential fabric and improve the quality of life for Bensenville residents
- Maintain the viability of the Northern Business District and the Green Street Corridor for light industrial, services, logistics, and distribution activity by reinvesting in public infrastructure, and providing modern signage and streetscape treatments.
- Provide a flexible framework for the Village that allows for flexibility in responding to eventual pressure for land use change along the key corridors of Thorndale, Irving Park, York and Green.
- Enhance north/south connections to the downtown area, and through the Northern Business District

Approach

Working with the Village of Bensenville, AECOM and Carolyn Grisko & Associates developed a comprehensive scope services to complete the following work efforts:

- Coordinate with local government entities to collect past studies, data and information related to the project, including DuPage County, the Illinois Department of Transportation, DuPage County, Chicago Department of Aviation, and the Illinois Tollway Authority.
- Evaluate existing land use conditions and assess compatibility with the Village's current commercial, industrial, and residential land use patterns, given likely OMP and EOWA outcomes.
- Complete a GIS-based field survey of Village-owned infrastructure assets for the Northern and Eastern Business Districts.
- Complete interviews with key stakeholders across the community and region.
- Provide a comprehensive market analysis and identification of economic development and redevelopment opportunities that link with proximity to O'Hare International Airport and the EOWA.
- Develop land use plans consistent with FAA land use compatibly criteria for the Northern and Eastern Business Districts, Mid-Town, and Downtown, inclidng the Irving Park Corridor.
- Evaluate existing transportation plans for the O'Hare International Airport area.
- Assess stormwater conditions and model flooding in the Silver Creek (Bensenville Ditch) and Addison Creek Watersheds.
- Provide media and marketing support, through Carolyn Grisko & Associates
- Forward implementation recommendations regarding economic development and priority infrastructure projects

PROJECT DATA SOURCES

AECOM considered and evaluated information from an array of sources, including:

- Addison Township Assessor
- Aerotropolis - John D. Kasarda
- Airport Business
- American Association of State Highway and Transportation Officials
- Bensenville Park District
- Boeing
- The Brookings Institution
- Canadian Pacific Railroad
- Chicago Metropolitan Agency for Planning (CMAP)
- CMAP - go to 2040
- City of Chicago, Department of Aviation
- Chicago Tribune
- Chicago Sun-Times
- Choose DuPage
- Cook County
- CoStar
- Council of Supply Chain Management
- CREATE
- Barron's
- Denver International Airport (DEN)
- Dallas / Fort Worth International Airport (DFW)
- DuPage County
- DuPage Area Transit Plan Update, 2011
- Elgin O'Hare West Bypass Advisory Council
- The Economist
- ESRI Business Solutions
- The Lakota Group - Transit Improvement Plan & Station Area / Corridor Study
- Federal Aviation Administration (FAA)
- Federal Deposit Insurance Corporation (FDIC)
- Federal Reserve Bank of St. Louis
- Federal Reserve Bank of Chicago
- Global Trade Atlas
- Hartsfield-Jackson Atlanta International Airport (ATL)
- Illinois Commerce Commission
- Illinois Department of Employment Security (IDES)
- Illinois Department of Revenue (IDOR)
- Illinois State Water Survey - University of Illinois
- Illinois Tollway Authority
- Illinois Department of Transportation (IDOT)
- IMPLAN

- InfoUSA
- Journal of Commerce
- Location One
- Metra Station Area Planning Manual
- McKinsey & Company
- National Renewable Energy Laboratory (NREL)
- New Urban News
- New York Times
- O'Hare International Airport Master Plan / Final EIS
- Pew Center on the States
- Rockefeller Institute of Government
- S.B Friedman & Company - TIF District Eligability Study
- Smith Travel Research
- Tax Foundation
- Mario Freese - Cover Artwork
- The Economist
- U.S. Census Bureau
- U.S. Department of Commerce, Bureau of Economic Analysis (BEA)
- U.S. Department of Commerce, Bureau of Labor Statistics (BLS)
- U.S. Department of Commerce, Economic Development Administration
- U.S. Department of Energy
- U.S. Environmental Protection Agency
- U.S. Department of Housing
- U.S. Department of Transportation
- U.S. Federal Housing Finance Agency
- U.S. Federal Railroad Administration (FRA)
- Transportation Research Board
- Urban Land Institute
- Village of Bensenville
- Village of Bensenville
- Village of Elk Grove - Industrial / Commercial Revitalization Master Plan Update
- West O'Hare Corridor Economic Development Study
- Urban Land Institute
- Will County

KEY CONSIDERATIONS

It is clear that Bensenville is well positioned to take advantage of specific opportunities, as follows:

- The seven communities around O'Hare serve as a critical employment, manufacturing, distribution, and transportation hub for the Chicago Metropolitan Area, supporting over 150,000 jobs in 2011, as well as about 10% of the region's roughly 1 billion square feet of industrial and distribution space.
- In spite of the "Great Recession" O'Hare International Airport's role as a global export hub has only increased. In 2010, a total of 526,000 tons of cargo were sent to 209 different countries, with Asia and European destinations being prominent. Looking to the future, export opportunities with Asia are only expected to grow further.
- Stakeholder interviews confirmed that Bensenville already enjoys a solid location in the region for business, which will only be enhanced by the EOWA and eventually, the Western Terminal.

In addition, our experience shows that global supply chains, just in time delivery, and new manufacturing processes are also changed the nature of industrial building design. In general, buildings are getting much larger, which is linked in part to the emergence of E-Commerce in the past 10 years. For large internet retailers—including online companies like Amazon.com as well as traditional retailers with an online presence like Wal-Mart—there is a new kind of industrial property: the fulfillment center. Fulfillment centers used to be the reserve of catalog businesses, but have been reborn for the 21st Century. Images of Montgomery Ward's employees roller-skating around the massive distribution center have been replaced by robotics, complicated systems of optical scanning, and miles of conveyor belts.

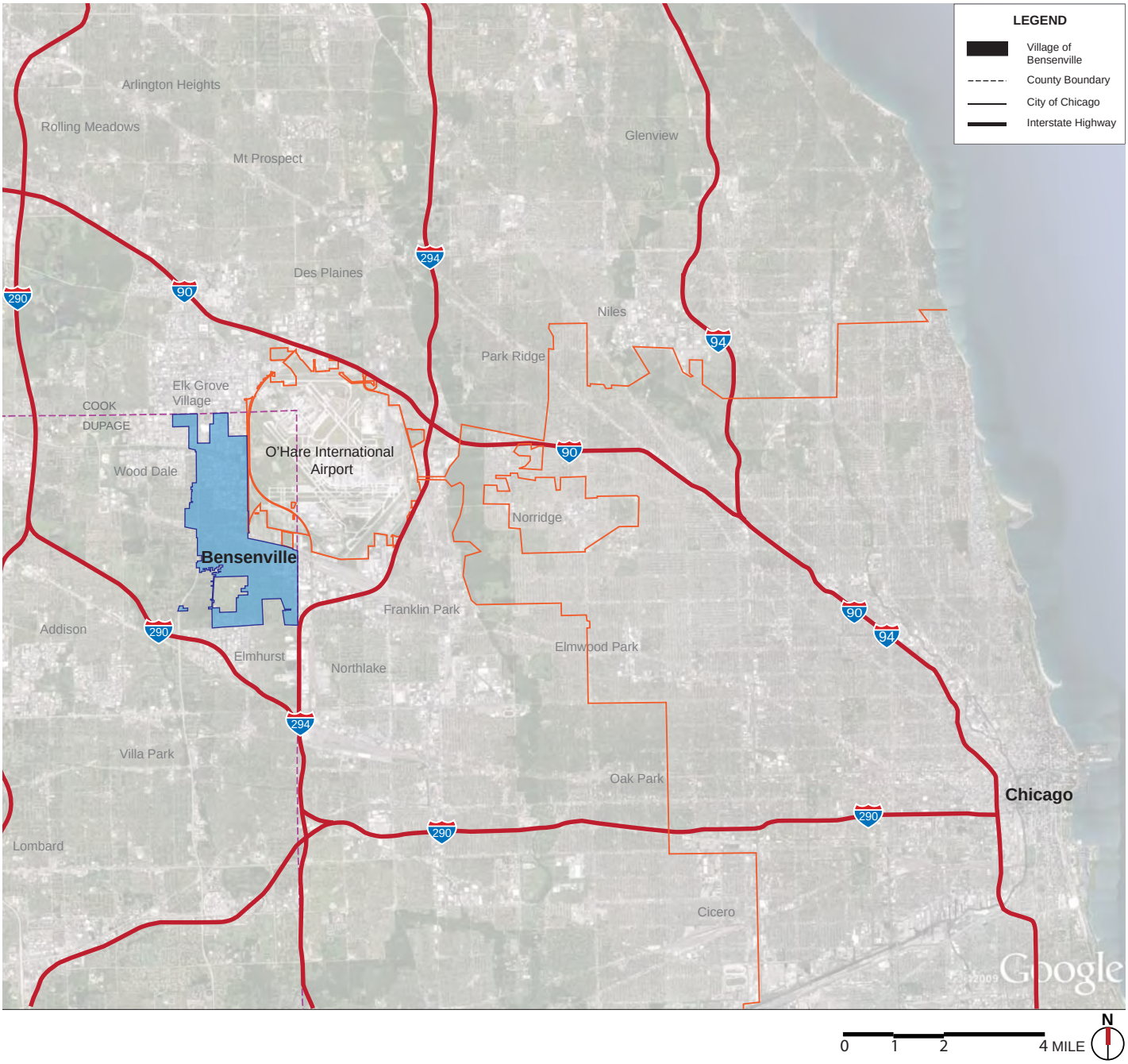
The Amazon.com fulfillment center in Fernley, Nevada, is larger than 13 football fields. Fulfillment centers are fundamentally different from most warehouses. For one thing, they operate in three shifts—24 hours a day. Fulfillment centers are often called pass-through centers because merchandise does not sit on the shelves for long. It often arrives, is shelved briefly, and is re-routed into packages and out the door without spending long on the shelf. This is a logical outgrowth of consumers' demand that items ship within 24 hours.

Realities

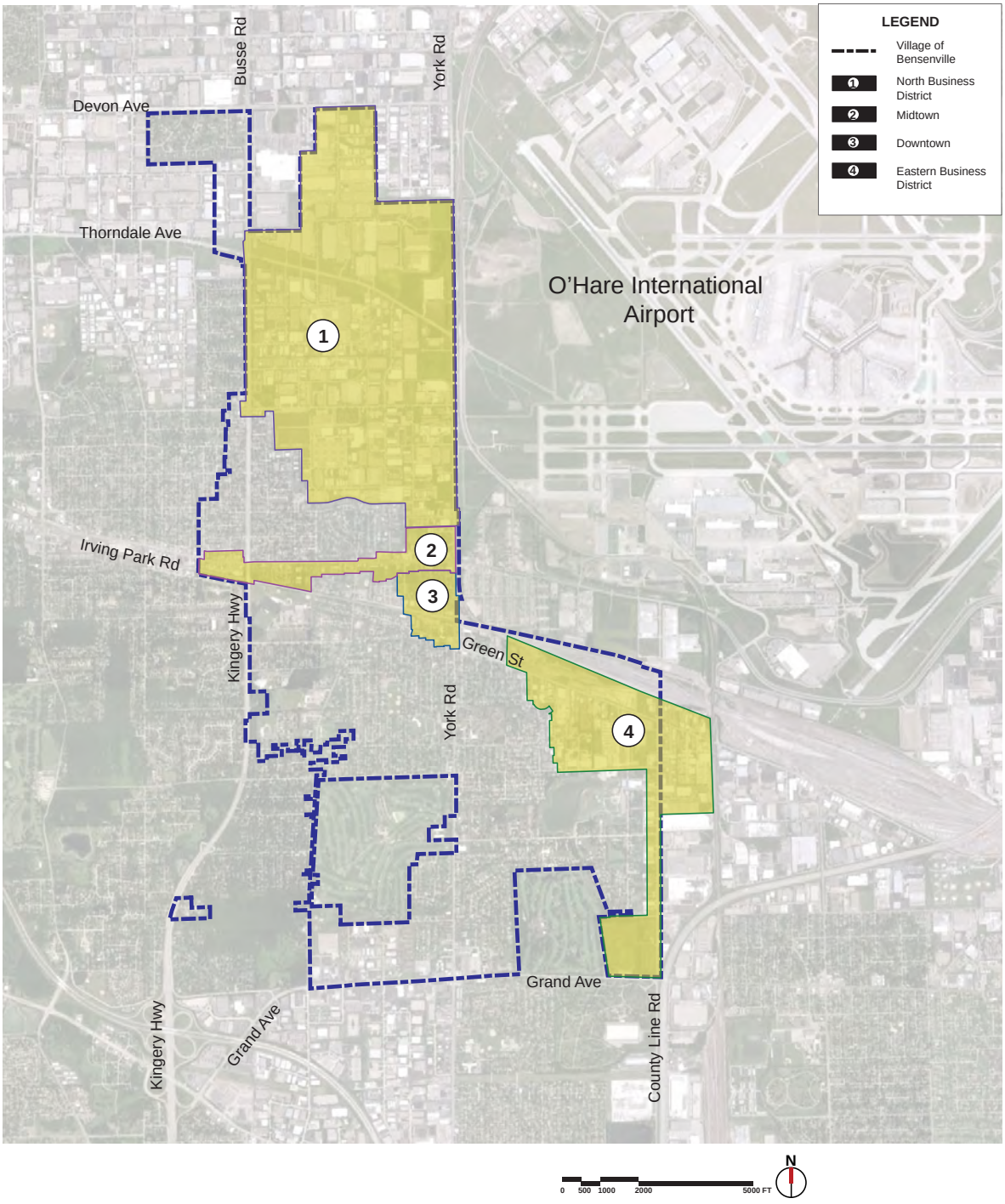
Our experience and analysis also confirmed that the identified opportunities must be weighed in consideration with other realities:

- The Chicago Region and Bensenville are only beginning to recover from the "Great Recession." Communities around the airport have been hard hit by the recession, supporting 59,000 fewer jobs in 2011 compared to 2001.
- Current schedules assume EOWA completion in 2025, 14 years in the future. The north leg of the project will be the last phase, planned from 2023 to 2025.
- The proposed Western Terminal is the key to higher value hotel and office development in Bensenville. Terminal leases for American and United will need to be re-negotiated by 2018, which will clarify market demand for a new terminal.

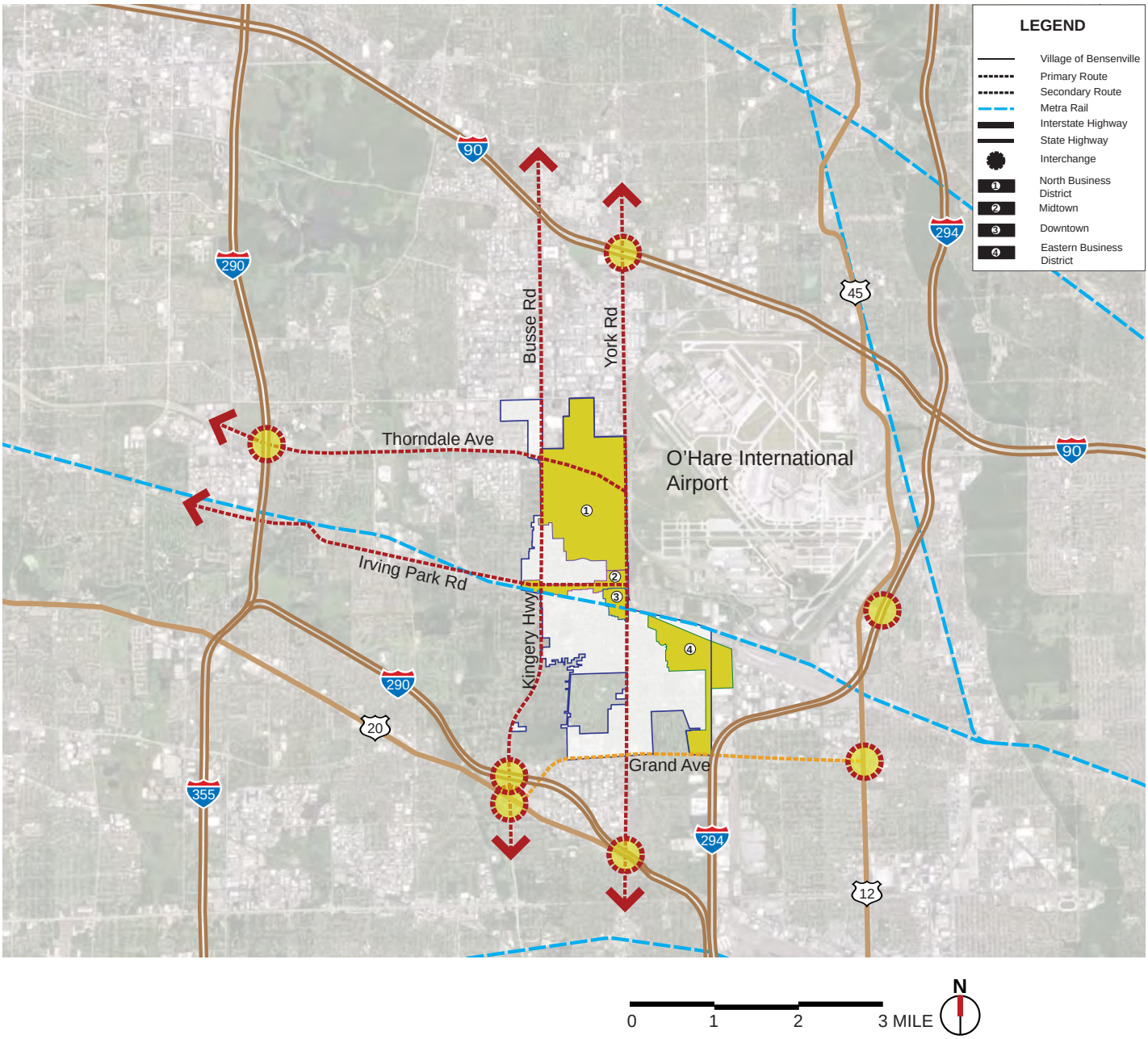
REGIONAL LOCATION



SUB-AREAS AND SURROUNDING CONTEXT



REGIONAL ACCESS ROUTES



LOCAL TRANSPORTATION NETWORK

Open House, overviewing the proposed alternatives for Downtown.

COMMUNITY ENGAGEMENT

As part of the FAA Airport Compatibility Study, AECOM conducted interviews with stakeholders, primarily owners of companies and real estate located within the project study area. As well, public open-house meetings were held in January and March of 2012 at Village Hall in downtown Bensenville to solicit input from residents and business owners regarding future real estate development outcomes for the community over the next 20 years. About 275 people attended these two public meetings.

The stakeholder interview process focused on critical issues and factors that will influence the path forward for the community as OMP/EOWA construction unfolds. Interview targets included:

- Village Staff / Elected Leadership in Bensenville
- Business Advisory Council Members
- Real Estate Investment Trusts who own property
- Locally owned companies
- Companies involved in transportation and freight movement
- Bensenville Park District

The array of opinions and perspectives were distilled by AECOM, based on our experience with economic development around the United States, to frame core principles that will influence project recommendations. The interviews revealed an array of factors that will dictate how the Village of Bensenville begins to move forward, suggesting that the Village of Bensenville is at a crossroads, with an evolving consensus as to the appropriate growth trajectory. Interviews pointed to interest in an array of outcomes for the community, some falling under a future vision generally described as “Rosemont West” and others speaking to an interest in achieving “something better”. Ideas related to Aerotropolis and the Airport City were noted, speaking to evolving concepts for airport linked economic development. While the jury is still out on the most appropriate future trajectory for the community, it is also clear that there is broad acceptance of the notion that Bensenville needed to “move forward”.

It is clear that Village plans need to be flexible, for many reasons:

- Timing for the Western terminal is uncertain, with even the beginnings of clarity unlikely before 2018. Analysis and experience suggests that the Western terminal is the link to higher value hotel and office development.
- Although the Tollway has clarified plans for the EOWA, actual completion of planned construction for the

southern leg of the new route will extend several years into the future.

- Key Village priorities are focused on the need to grow the tax base, while also following through on plans for current targeted areas, including the Legends and the Brookwood / York area.

Business Location

Bensenville has been a solid location for industrial, distribution, and service business, with lower taxes compared to Cook County. Office development has tended to concentrate in areas east of O'Hare International Airport.

- While local companies were very positive about Bensenville's strategic location in the region, with the ability to access major interstates quickly, there were concerns about the poor quality of local roads, some of which are now being repaired and improved.
- Concerns also focused on the lack of effective north south access across the Northern Business District.
- While rail access was viewed as a competitive advantage for the community, the majority of goods movement is handled by truck (Fedex / UPS) and semi-trailer, with a small but growing share of shipping containers.
- Concern focused on the on-going construction at York and Irving Park, with many companies trying to avoid this congested area.

Economic Development and Land Use Implications

- Private Sector attitudes about the Village as an economic development partner have improved under the current administration.
- Bensenville's day-time employment market is distinct from its resident market.
- Economic conditions in the community are generally improving, but have not yet recovered to pre-recession levels. While industrial vacancies are improving, hotel markets have been slow to recover.
- Although conditions are improving, the area has been hard hit by de-industrialization. At one time, the area was known by some as "the tool and die capital of the world". Manufacturing processes have changed, such that workers now need to be skilled with computers and software.
- Many local manufacturers rely on an array of local suppliers, many of whom operate in Franklin Park or Elk Grove Village. As such, decisions made in one community will impact companies in an adjacent community.
- The interviews pointed to the existence of a base of manufacturing companies in Bensenville, Wood Dale, and Elk Grove Village who can design, build, market, and sell an array of manufactured goods – a self-contained enclave.
- O'Hare International Airport-linked air freight (including consolidators, freight handlers, and freight forwarders) is a key demand driver.
- A majority of domestic air cargo and logistics firms are already in the market, so growth can only come through economic recovery and penetration of overseas markets, particularly direct flights to Asian markets, including China.
- Air freight companies appear willing to pay a premium for locations proximate to O'Hare, and typically need buildings with increased clear ceiling height, and tend to be more image conscious.
- Interviews reinforced past challenges with Village policy regarding zoning changes, particularly along York Road.
- One use that did not receive much focus was off-airport parking. Experience suggests that with a new Western Terminal, there will be interest in this type of activity.
- Interviews pointed to uncertainty as to the potential to increase building heights in the downtown area.
- The impact of runway flight paths on building heights was noted as a constraint.
- The need to improve north south access in the northern business district, including connections from Supreme to Industrial Drive, and Meyer to Irving Park Road.
- To encourage productive economic development outcomes, the Village will need to pursue both active and passive efforts.
- Implementation of quiet zones on the Metra / CP and UP lines is important
- Proximity to O'Hare International Airport has constrained retail opportunities.
- Although there is limited vacant land near O'Hare, airport linkage would point to evolving opportunities for companies involved in assembly / distribution of higher value components and commodities, possibly including produce, flowers, and pharmaceuticals.
- Redevelopment in the community is challenged in that many older industrial areas are built out with smaller buildings, inadequate truck courts, and insufficient clear ceiling heights. Modern industrial, distribution, and service buildings are offering truck courts that are 135 feet deep, with clear ceiling heights to 32 feet, all with a higher percentage of office space. With increased exports, there is also an evolving need for secure truck courts as well.

- In general, older buildings are more likely to be locally owned, while the larger and more modern buildings are more likely to be investor owned (REITs in particular).
- Prior to the recession, real estate values in Bensenville increased strongly, in part due to speculation as initial conversations about the EWOA began.

Key Gateways / Interchanges

Intersection, York Road and Irving Park Road – Once grade separations for UP and CP are complete, and Irving Park road is relocated, this intersection will serve as a critical eastern gateway for the Village into O'Hare International Airport and points east. Irving Park is already seen by many as the "face" of the community. For the short-term, intersection improvements will impact existing businesses, some of which may lose parking.

York Road, From Thorndale to Irving Park - Interviews suggested that York Road will see greater development pressure for restaurants and hotels, with offsetting suggestions that the corridor would instead see demand for airport-linked logistics and related services, linked with proximity to Irving Park Road. Interviews pointed to the possibility of off-airport parking as a possible use in this area.

Intersection, York Road and Green Street – Property acquisitions for the airport security zone have created a new open space with panoramic views into O'Hare International Airport, providing a unique community edge with the airport. Uses in this area include two gas stations and a telephone switching building.

Intersection, Thorndale and IL Route 83 – With mid-term completion of the EOWA project, parcels around this interchange become logical candidates for redevelopment. Scale / pressure for change will link with timeline for the Western Terminal.

Intersection, Irving Park and IL Route 83 – Seen as a key challenge for the community, with few easy solutions. Irving Park serves as a heavy truck route, with connections to IL Route 83 requiring movement through residential areas, along street such as Marshall and Brookwood.

Intersections, IL Route 83 and Foster / Fairway / Industrial - Interviews and analysis speak to the need to continue to evaluate truck traffic at these key local interchanges with IL Route 83. As the recovery builds, intersection design may need to be re-evaluated to ensure consistent truck access.

Intersection, Thorndale and York Road – Current EWOA plans presume eventual connections from York to a western terminal, creating opportunities for off-airport services along York, constrained only by flight path-linked building height constraints in key areas.

Intersection, Green and County Line – Planned EWOA improvements will significantly enhance regional access from this intersection, creating realistic mid-term development interest. Ideas included destination retail, office, and airport linked logistics and services.

GUIDING PRINCIPALS

In working through the interviews, AECOM identified the following guiding principals as critical to sustaining long-term positive outcomes for the Village:

- Enhance the Village's fiscal position
- Maximize economic opportunities from OMP / Western Terminal and EOWA investments
- Sustain the viability of the Northern and Eastern Business Districts as locations for higher value economic activity
- Invest in municipal infrastructure
- Encourage residential development
- Enhance quality of life
- Build support for growth in property values
- Provide a framework to manage pressure for land use change

Economic Analysis

Economic Analysis

The Economic Analysis section frames key factors related to demographic, real estate, and economic conditions in Bensenville and across the Chicago Metropolitan Area, and places them in context with regional, national, and global trends, all of which will influence the overall economic development strategy. The approach considers the reality of recovery from the "Great Recession", as well as the long-term transformative Impact of the EOWA and OMP.

THE GREAT RECESSION

While economists will tell us that the United States was in a recession from 2008 through 2009, the reality is that the larger period from 2006 to the present needs to be viewed as a "generational" economic event, one in which comparisons to the 1930's are disturbingly relevant. The Midwestern US felt these pressures initially by 2006, as industrial activity slowed due to initial declines in home construction.

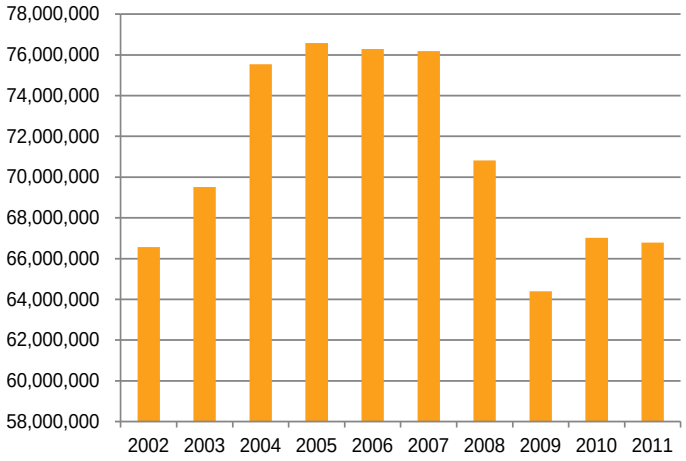
The collapse of Lehman Brothers in September 2008 marked the official beginning of what now appears to be one of the most profound periods of economic distress in recent history. By October 2008, financial markets in the US had essentially stopped working, industries shutdown, and unemployment rates dramatically increased. Traditional cornerstones of the US economy such as the auto industry were weakened to the point of bankruptcy.

Moving forward to 2012, while the recovery has begun, significant headwinds remain for the public sector. Property values have only started to recover, even as distressed assets constrain the rate of growth. When combined with slow recovery in sales tax revenue, and more significant growth in costs, the period from 2009 to 2014 may prove to be the most difficult that the public sector has faced in recent history.

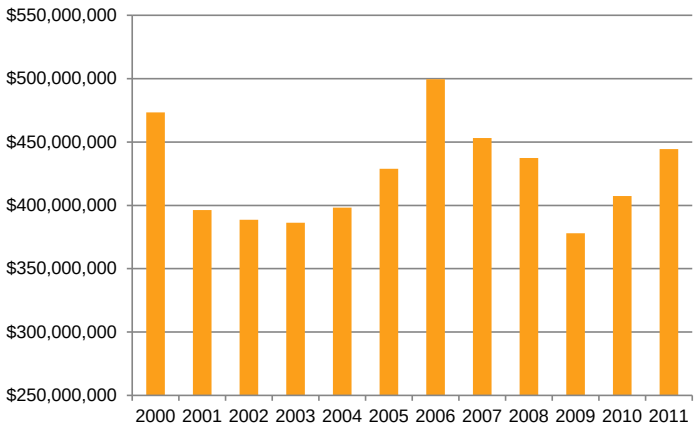
The impacts cannot be overstated:

- Total employment across the Chicago Metropolitan Area in 2011 (roughly 3.6 million jobs), is far below 2001 levels, when the region employed almost 3.9 million people.
- Communities around O'Hare International Airport, including Bensenville have been hard hit by the recession, with 59,000 fewer jobs in 2011 compared to 2001.
- O'Hare has been impacted. Total passenger levels for 2011 (66,791,366) are still below levels achieved in 2001 (67,448,064). The rate of recovery (1.8% per year) is

O'Hare Passenger Volume, 2001 to 2011



Retail Sales, Bensenville, Noted Years



below current FAA terminal forecasts for O'Hare International Airport, which expect passenger growth of 2.8%.

- With slow recovery in passenger levels, O'Hare International Airport area hotel occupancies remain challenged.
- The Village of Bensenville now employs fewer people compared to 2005. Sales tax collections are recovering, but still slightly behind levels achieved in 2008. General Fund balances are only beginning to recover.
- The real estate industry was hard hit, with dramatic declines in construction from 2009 through 2011. One outgrowth of the recession has been a significant tightening of commercial real estate lending criteria.

Our experience also shows that the "Great Recession" has only obscured other critical factors that need to be accommodated in the Plan, including:

Boomer Retirements

Over the past 50 years, the Baby Boom generation has exerted an outsized influence on the nation. With their retirement savings and home values reduced, many Boomer households are now delaying their retirement and are electing to remain in the workforce. Their decisions will continue to influence the country.

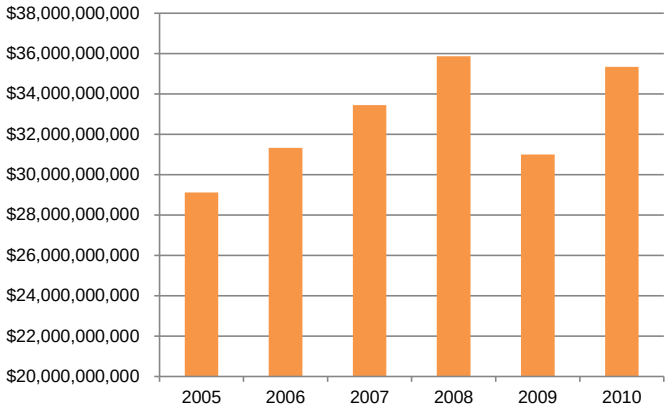
Higher Energy Prices

While natural gas prices are at 10-year lows today, cost increases for gasoline and diesel fuel over the same period have been unsustainable. Over time, these increases will exert further influence over location decisions for residents and businesses, with greater emphasis on locations proximate to transit and employment centers. Higher energy prices are driving considerable investment toward an array of potentially transformative strategies related to renewable energy, including geothermal, rooftop solar, and eventually electric vehicles.

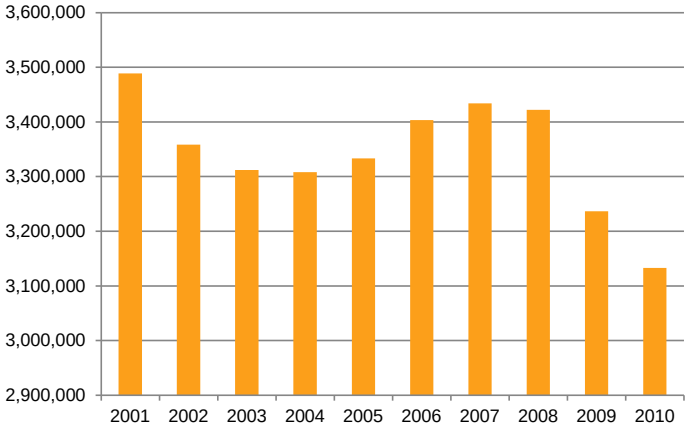
Growth of Asian Markets

Over the past three decades, remarkable economic growth has occurred in Asia, especially in the East Asian economies of China, India, Singapore, Thailand, Philippines, Indonesia, and Vietnam. The impacts of Asia's rapid economic development on the US are multifaceted. These nations have recovered strongly from the 2008-2009 global economic downturns, with 8.2 percent growth in 2010. Our experience indicates that growth in air travel and air cargo linked with Asia will be more significant in coming years. For China alone, plans

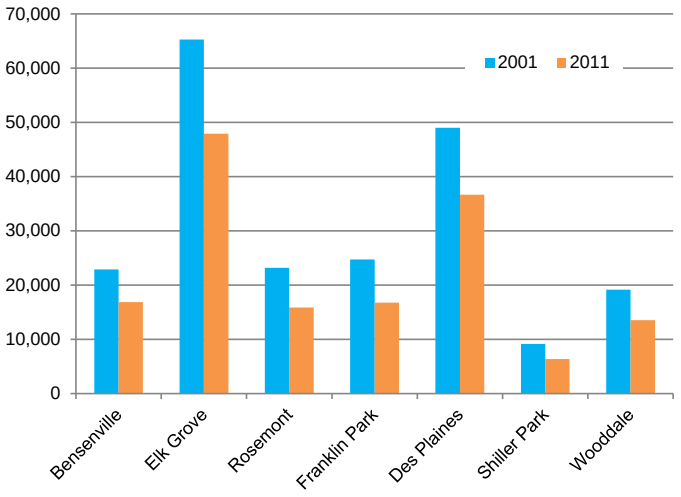
Dollar Value of Exports Through ORD, 2005-2010

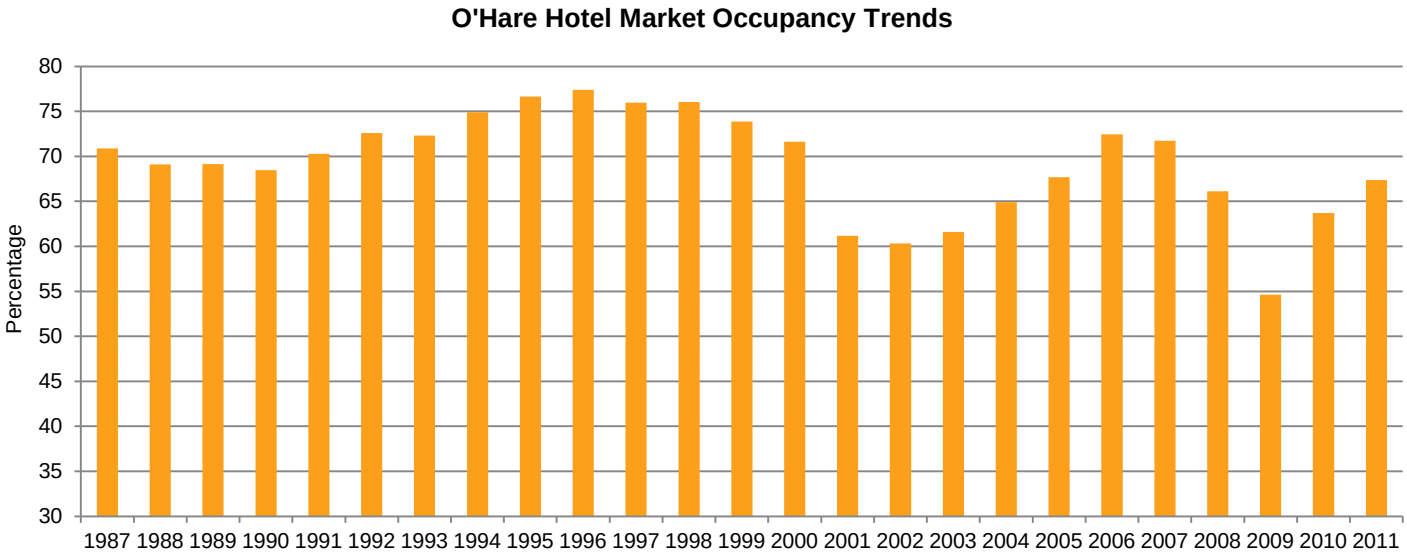


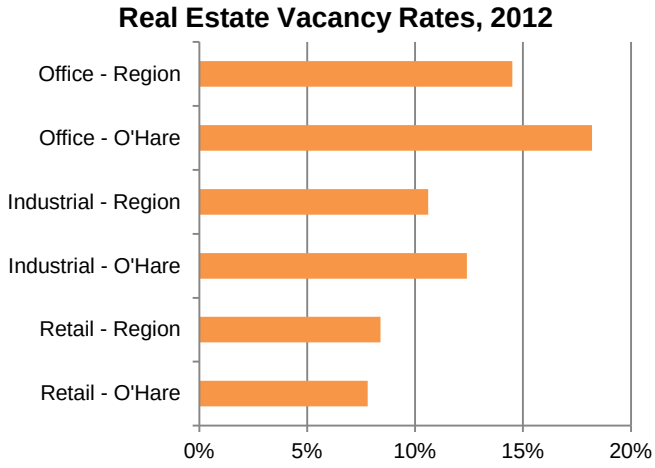
Chicago Regional Employment Change

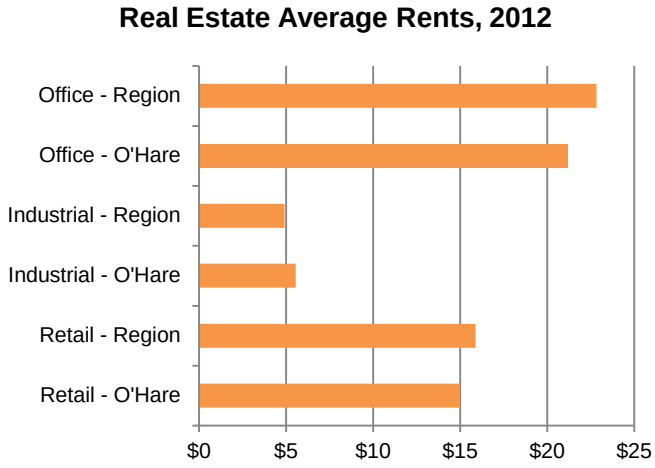


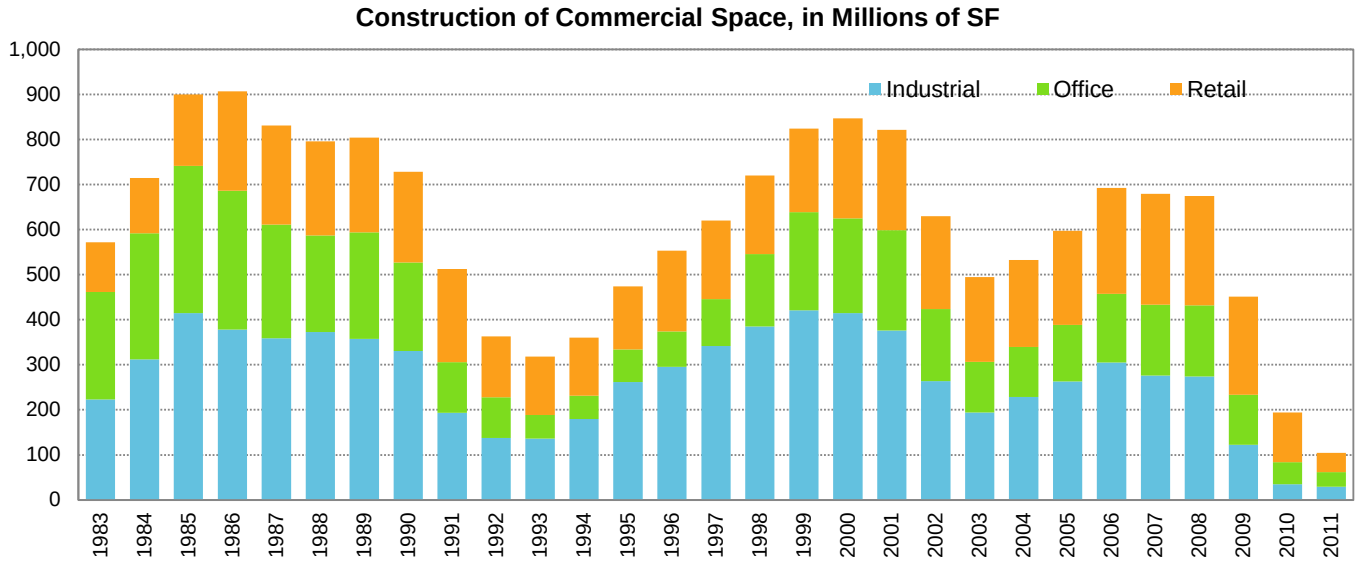
Change in Employment, Noted Communities




O'Hare Hotel Market Occupancy Trends
Percentage
80
75
70
65
60
55
50
45
40
35
30
1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011


Real Estate Vacancy Rates, 2012
Office - Region
Office - O'Hare
Industrial - Region
Industrial - O'Hare
Retail - Region
Retail - O'Hare
0%
5%
10%
15%
20%


Real Estate Average Rents, 2012
Office - Region
Office - O'Hare
Industrial - Region
Industrial - O'Hare
Retail - Region
Retail - O'Hare
$0
$5
$10
$15
$20
$25


Construction of Commercial Space, in Millions of SF
1,000
900
800
700
600
500
400
300
200
100
0
Industrial
Office
Retail
1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011

to build between 20 and 40 major airports in coming years are a clear implication.

Lastly, looking back to the last significant recession in the early 1980's, it is notable that many companies that are taken for granted today were formed out of this last period of dramatic instability. We would expect the same from the current economic recession, which reinforces a core point for the Village, which is that while the community faces an array of risks in coming years, there are also clearly emerging opportunities. While the community retains a focus on its history and traditions, it is equally important to move forward. Our experience suggests, as always that the real challenge is, "not in accepting new ideas, but in escaping from the old ones". (John Meynard Keynes)

TRANSFORMATIVE IMPACT - EOWA AND OMP

Going back to 2005, when the FAA approved the OMP to increase capacity and reduce delays, the Village of Bensenville was directly and negatively impacted. For the Village, these losses had immediate fiscal impacts, as well as long-term construction-related disruptions along key arterials particularly Irving Park Road and York Road, resulting in increased congestion and delay. While these negatives remain clearly in focus for Village residents, we believe that it is equally necessary to consider and appreciate the mid- to long term economic opportunity for Bensenville that links closely with:

- Construction of the OMP and the EOWA
- Construction of the Western Terminal and Western Access to O'Hare

In total, these projects, while clearly disruptive in the short-term, have the long-term ability to transform the community, particularly areas along and north of Green Street, as well as along York and Thorndale.

Current construction schedules (tentative and subject to change) for the OMP and EOWA follow. For the community, anticipated by 2015, there should be a new gateway into O'Hare and points east, with grade separated rail lines for UP and CP. Looking to the mid-term, more important improvements associated with construction of the EOWA will be underway, providing the community with eventual direct regional access to the Interstate and Tollway system, a dramatic change.

As currently proposed, the EOWA has been broken down into several components summarized in the August 2011 Illinois Tollway Authority Capital Program Summary. The report frames current expectations for project cost and timing, with a current expectation that the project will begin with rehabilitation and expansion of the existing Elgin-O'Hare Expressway from US 20 to Rohlwing Road. The southern leg of the bypass, from I-294 to Thorndale, would be built between 2018 and 2025, followed by the north leg. Timeframes for the Western Terminal are unclear; policy guidance suggests that the Western Terminal will need to be a market (i.e. airline) driven construction project.

With the EOWA, the Green St, Irving Park Rd, and York Rd corridors will see increased visibility and dramatically enhanced regional access, which over time will influence

Tentative Dates	Project Element
2013 to 2014	Realignment of Irving Park Rd
2012	Relocation of United Cargo
2012	Completion of UP Irving Park Rd grade separation and realignment
2012 to 2015	CP Irving Park Rd grade separation
2013	Start negotiating with airlines for Phase 2B Construction funding
2013	Completion of Runway 10C – 28C
2013	Rehab 4 lanes / Add 2 lanes to the existing Elgin O'Hare Expressway, US 20 to Rohlwing Road
2014 to 2017	Construct 4 new lanes - Elgin O'Hare Extension, Rohlwing to York
2015	Completion of southern Runway 10R-28L
2015	Completion of South Air Traffic Control Tower
2016?	New consolidated rental car facility and ATS extension
2018 to 2022	Construct 4 new lanes - Elgin O'Hare Extension, South Leg of Bypass, Thorndale to I-294
2018	Anticipated Airline Terminal Lease Renewal
2020?	Tentative Completion of Runway 9C-27C
2020?	Tentative Extension of Runway 9R-27L
2023 to 2025	Construct 4 new lanes - Elgin O'Hare Extension, North Leg of Bypass, Thorndale to I-90

land use change in these areas. Current EOWA plans indicate that there will be direct access from York Road to the new Western Terminal. Direct access is a critical consideration for hotel development and supporting restaurant uses.

Current plans include an array of proposed public transit improvements related to the Western Terminal and western access. The new terminal itself is proposed to include several intermodal connections, which could include or relate to the Metra STAR Line, extension of the Blue line to the western terminal, and bus rapid transit (BRT). While funding for all of these ideas is completely unclear at present, current plans do include a dedicated "transit corridor" along Thorndale Ave, with one or more intermodal transit stations. For Bensenville, potential intermodal connections from existing Metra stations should be further evaluated.

For Bensenville, from an economic development standpoint, the long-term benefits of the OMP and EOWA will ultimately be transformative for the community regardless of future decisions related to the Western Terminal.

Companies located in the Northern and Eastern Business Districts already enjoy considerable access to the regional transportation system, with proximate connections to I-90, I-290, and I-294. The EOWA will only enhance access. The community already benefits from a favorable tax climate in DuPage County, with tax rates lower than adjacent Cook County.

AVIATION LINKED ECONOMIC DEVELOPMENT

While a majority of the local discourse remains focused on the Western Terminal, and likely real estate impacts anticipated with its eventual construction, our experience suggests that more important economic development factors linked with O'Hare cargo activity are far more important for the community in the long run. These factors begin with the fact that O'Hare is a defacto international cargo gateway, which in spite of the recession, has only grown in size since 2005 in both tonnage and value of exports. O'Hare cargo levels compare with airports such as London-Heathrow and JFK-New York. The dollar value of exports out of O'Hare has increased at a 4% annualized rate since 2005.

In 2010, a total of 526,000 tons of cargo were sent to 209 different countries, with Asia and European destinations being prominent. Looking to the future, export opportunities with Asia are only expected to grow further. As evidence of this, between 2005 and 2010, exports to

China through O'Hare increased from $1.8 Billion to $3.9 Billion, a 16% rate of annualized growth. China will soon exceed Japan as one of O'Hare's top export countries. Japan currently receives in excess of $4 billion in exports. The value of exports to India, Japan, South Korea, and Indonesia all increased at between 6% and 14% annual rates. Overall, the share of O'Hare exports to Asian markets increased from 43% to 49% since 2005.

The array of high-value, time-sensitive, semi-finished goods, components and commodities that move through O'Hare International Airport is diverse and significant:

- Nuclear systems, boilers, & electrical machinery
- Optical, photographic, cinematographic, & measuring equipment
- Medical / surgical instruments
- Pharmaceutical products
- Aircraft parts
- Organic and inorganic chemicals,
- Rare-earth metals,
- Glass and glassware
- Vehicles, parts and accessories
- Tools & cutlery

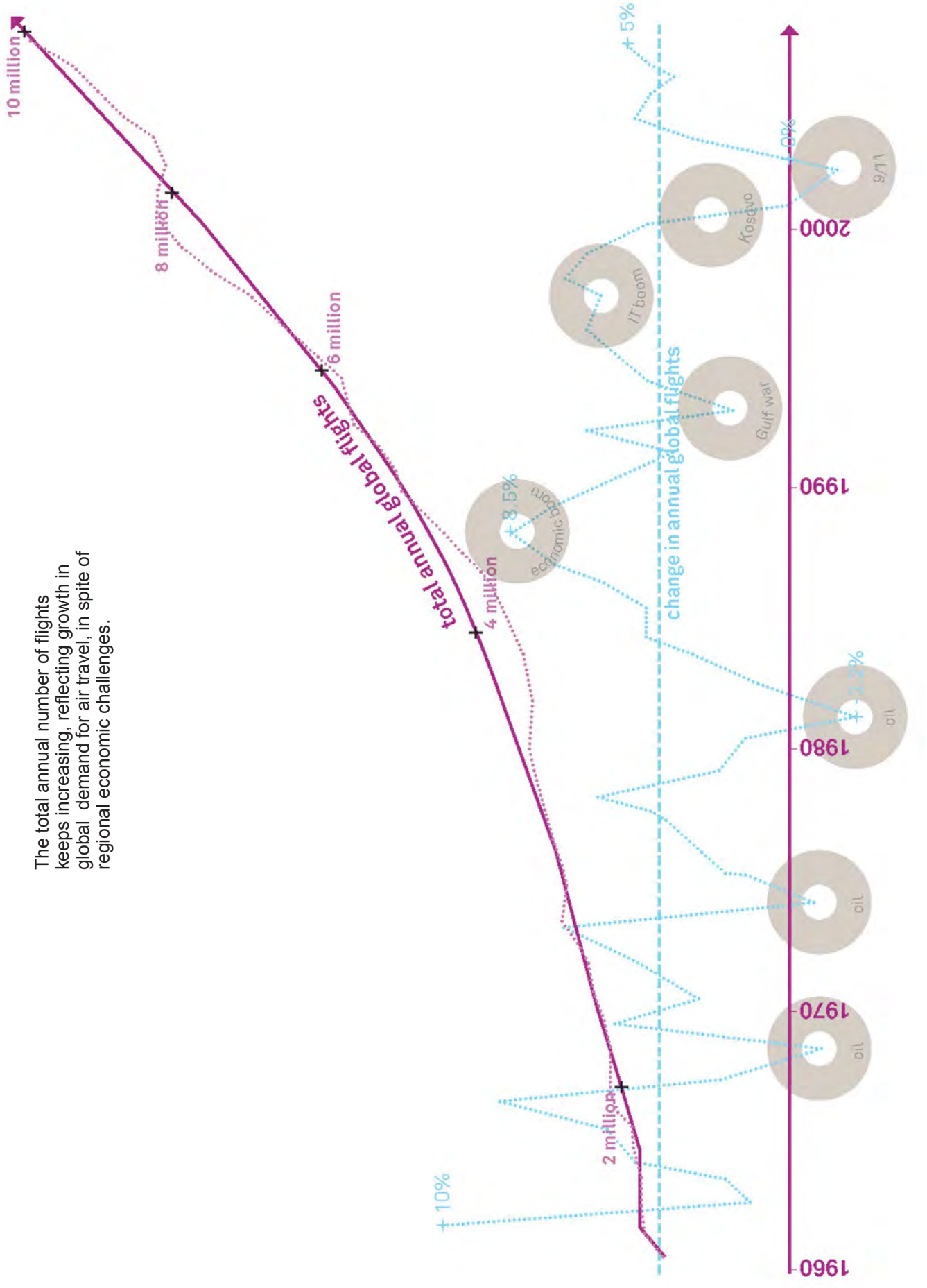
- Essential oils, soaps, perfume,
- Starches, glues, enzymes
- Furniture;
- Musical instruments & art
- Games and sports equipment
- Meat & fish, dairy produce,
- Beverages & spirits
- Apparel, foot ware
- Oil seeds / fruits, grains, seeds,
- Textiles & fabrics
- Clocks and watches
- Cut flowers

Major airports which offer wide-body international passenger service carry a significant amount of air cargo, in addition to dedicated freighters, such as Atlas Air, CargoLux, and Polar. Sources suggest that about 75% of all cargo travels on passenger aircraft. This fact was particularly challenging for St. Louis, which lost its hub status after American Airlines purchased TWA in 1991, resulting in a loss of wide body connections to several overseas markets. Interviews suggest that local producers who rely on air cargo in St. Louis are increasingly using O'Hare International Airport, as well as other gateways, for international cargo movement.

Hub airports like O'Hare are critical drivers of regional economic activity. While at the simplest level they are facilitators of movement for both passengers and goods, airports are increasingly being relied upon to:

- Provide other amenities within the airport properties including retail, hotel and transit businesses
- Serve as locations for aircraft repair and servicing
- Encourage office park development nearby to allow for business travelers easy access
- Support manufacturers and logistics firms reliant on air transportation for final product assembly / fabrication and just-in-time delivery.
- Encourage entertainment and retail centers to locate near airport terminals to take advantage of the flow of potential visitors and customers
- Facilitate regional transit infrastructure linkage into airports
- Provide educational options for people looking into careers in aviation services

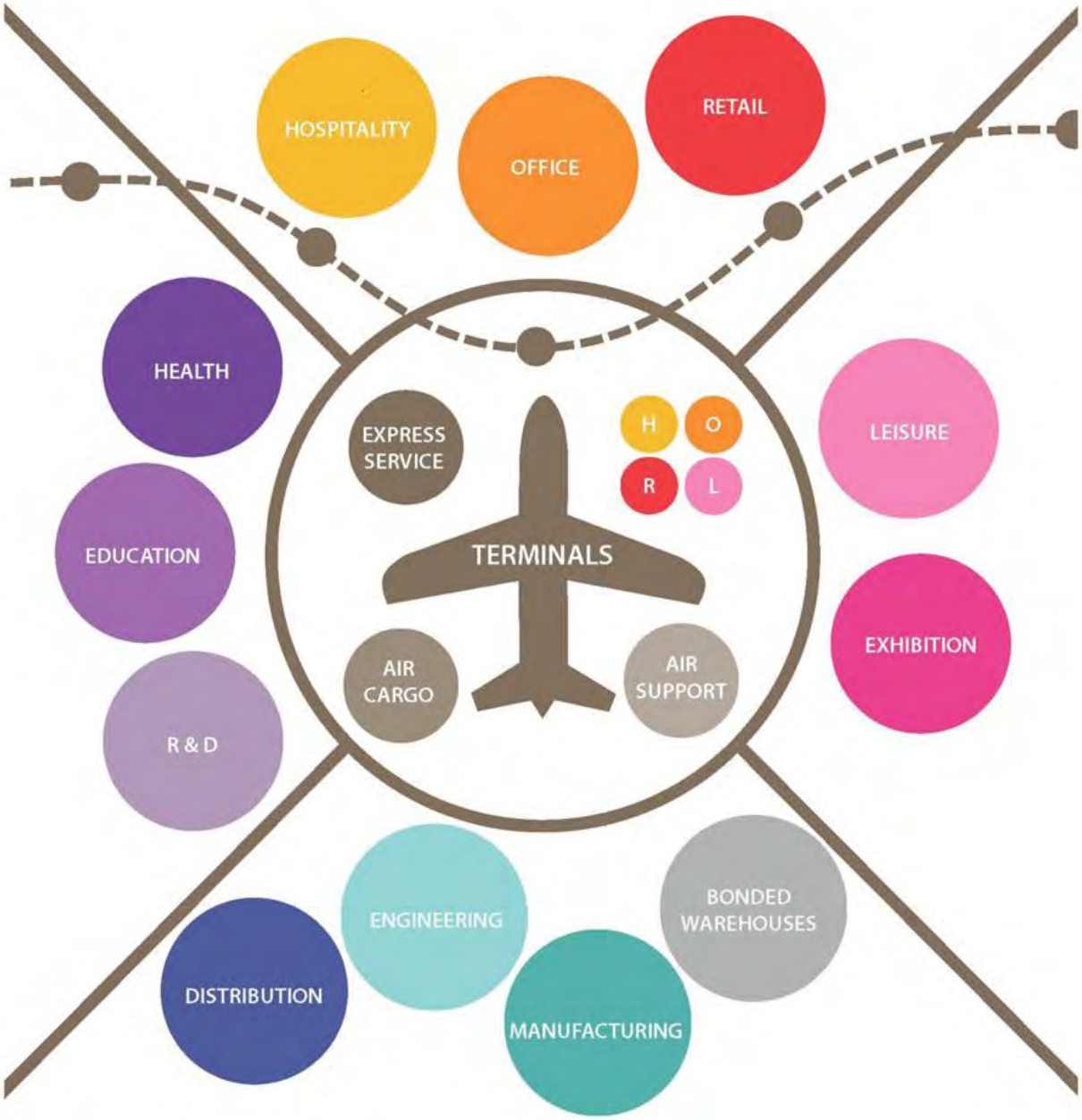
Our experience with aviation related economic development highlights two prevailing concepts that describe how in the future airports will increasingly serve as economic development engines for a region. These two related concepts, known as the Airport City and Aerotropolis, each frame how lines between on and off-airport activities are increasingly being blurred, particularly in overseas market where new airports can be built from the ground up in a planned fashion with enhanced transit connectivity. Both concepts presume that people and businesses will increasingly want to local proximate to international airports. An essential element that binds both concepts together is the overall growth in global flights, which has increased in spite of a myriad of economic challenges, as shown on the following page.



The total annual number of flights keeps increasing, reflecting growth in global demand for air travel, in spite of regional economic challenges.

AIRPORT CITY

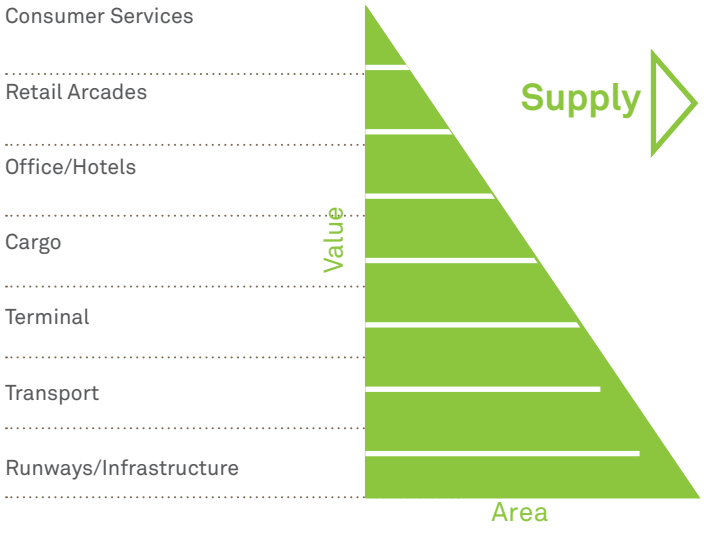
The airport city looks at an airport as more than just a transporter of passengers and goods but instead as a system which can provide numerous services within the airport grounds. Facilities found within the airport grounds includes retail and restaurant locations, aircraft maintenance facilities, free trade zones, shipping and export facilities. By focusing on the other potential activities which can occur within the airport property, airports are able to pursue an increasingly diverse revenue stream than simply the traditional air traffic services for which they are designed. Older airports can implement these strategies into renovations of existing facilities or when expanding with additional terminals which are designed to include these elements. Newly designed airports often have these features designed into them from the start, capitalizing on these amenities in the most efficient and economical process possible.



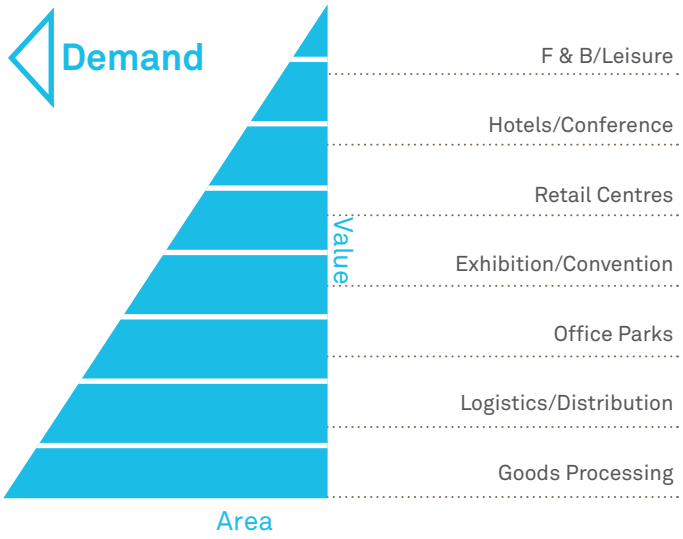
AEROTROPOLIS

Popularized by Professor John Kasarda, the Aerotropolis concept goes one step further, presuming that economic activity (urban living and business activity) will increasingly concentrate around airports, extending from freight and logistics, to office and professional services, health care, hotels, residences, and entertainment / retail. The concept is built entirely around and connected through an airport. Linkage between modes and residential / business nodes is essential. By acknowledging airports as an economic catalyst and driver of development, the Aerotropolis concept examines how the airport influences the surrounding communities and the types of development which occurs. The following graphics speak to the opportunity and challenge of aligning "inside the fence" elements, largely infrastructure assets, with key drivers of demand which are "outside the fence"

INSIDE Fence: Airport



OUTSIDE fence: Airport City



INDUSTRIAL REAL ESTATE TRENDS

In the past, manufacturers of goods custom-fitted their space with specialized machinery and re-location was often not a viable option due to transaction costs. Likewise, if a manufacturer moved or vacated an industrial building, re-tenanting would be difficult because the property would require extensive renovations to clear out the old machinery. This dynamic is changing, which has several implications:

- The market for industrial real estate has expanded. In the days when industrial properties were highly customized for the tenant, the market for industrial real estate was relatively quiet. Old properties could not easily be transformed for different uses.
- Industrial real estate in the 21st Century is inextricably linked to transportation, so connections to rail, air, and truck matter tremendously in understanding the cost effectiveness of moving goods and services around the world.
- Industrial real estate is increasingly influenced by institutional investors, known as Real Estate Investment Trusts (REIT). These entities invest in projects that can be bundled together with other like projects, with increasing importance being placed on “investment grade” properties. REITs make long-term income projects that must stand up to investor scrutiny, so they increasingly prefer standard products with consistent design and construction standards.
- The explosion of e-commerce has led to resurgence in fulfillment center construction. Because of the consumer focus, many are located near airport hubs of major shippers—including Louisville (UPS), Memphis (FedEx), Indianapolis (USPS). Fulfillment centers are labor- and land-intensive, so companies seek locations with a quality labor force, low property taxes, and lower land costs. The facilities are between 250,000 and 750,000 square feet. Ceiling height must be a minimum of 32 feet to accommodate the extensive shelving and storage necessary.

AIRPORT REAL ESTATE ANALOGIES

AECOM Economics assessed real estate development trends around US airports comparable to O’Hare International Airport to provide context as to the level of development and mix of real estate activity that can evolve around these facilities. The following airports were studied:

- O’Hare International Airport (ORD)
- Hartsfield-Jackson Atlanta International Airport(ATL)
- Dallas Fort Worth International Airport (DFW)
- Seattle-Tacoma (SEA)

Data from CoStar Group, Inc was used to analyze the overall conditions and trends in the industrial, office and retail markets around these airports, which are also shown on the following page. For each airport, a three-mile trade area was identified. The following bulleted list summarizes industrial market conditions near noted airports:

- Compared to other airports, vacancy rates for industrial property surrounding O’Hare International Airport, ATL and DFW are higher compared to their respective regions.
- Industrial development is more heavily concentrated around O’Hare International Airport compared to the other airports, with 4.7% of a regional inventory over 1 billion square feet.
- Reflecting the older age of developed space around O’Hare International Airport, the average building size is smaller (53,000 sq. ft.) compared to DFW with an average of 114,000 sq. ft. As DFW is a newer airport, a majority of the industrial space that has been developed is newer, larger floorplate inventory.
- Industrial space in the O’Hare International Airport market rents at a premium, currently $5.30 per sq. ft., to the Chicago regional average. Philadelphia is the only other market with a similar premium, albeit on a much smaller share of inventory.

O'Hare International AIrport (ORD)

Dallas Fort Worth International Airport (DFW)

Seattle-Tacoma International Airport (SEA)

Hartsfield-Jackson Atlanta International Airport (ATL)

DEVELOPMENT PROGRAM FOR STUDY AREAS

The FAA Airport Compatibility effort has clarified an array of strengths and weaknesses that impact the ability of Bensenville to eventually benefit from projects such as the OMP, EOWA, and Western Terminal. As well, the regional economy has only begun to recover from the "Great Recession", which creates practical constraints on both real estate demand, as well as public sector resources to support development. Over time, fueled in part by the EOWA and Western Terminal, pressure for land use change will gradually emerge. The scale of land use change, possibly including new office, residential, retail, as well as higher value airport logistics / distribution and light industrial activity, will link directly with the following factors:

- Decisions by the Illinois Tollway regarding the final configuration of access road connections to the EOWA, with or without the Western Terminal.
- The impact of runway flight paths, which constrain building heights, particularly north of Thorndale, and along York Road south of Foster.

The following matrix summarizes future real estate development that could be achievable in Bensenville. The matrix highlights real estate development potentials for Bensenville through 2035. The approach presumes that, as a largely built out community, the majority of new space shown below for Bensenville can only come through the demolition of existing space.

Market	With EOWA & West Terminal, 2035	With EOWA & Without Terminal, 2035
Industrial / Flex	1.5 million sf gross- Gradual shift from warehouse to higher value flex (office, industrial, and distribution).	2 million sf gross - Gradual shift from warehouse to higher value flex (office, industrial, and distribution).
Office	500,000 sf - Focused primarily along and East of Thorndale Corridor. Densities are expected to be in a 4 to 6 story range, with the possibility for taller buildings along Thorndale.	300,000 sf - Focus on Green Street. General densities are expected to be in a 3 to 6 story range, with surface parking
Destination Retail	175,000 to 250,000sf - focus on 1 or 2 larger format stores on sites proximate to EOWA interchanges. Total includes related pad sites	Up to 175,000 sf - focus on 1 or 2 larger format stores on sites proximate to EOWA interchanges. Total includes related pad sites
Neighborhood / Community Retail	75,000 to 100,000 sf - neighborhood retail plus restaurants (hotel / pad sites).	50,000 to 70,000 sf - neighborhood commercial & services.
Residential	1,100 Total Units; 35% multi-family	700 Total Units; 20% multi-family
Hotel Rooms	Range of 370 to 1,230 rooms, based on which airlines locate on West Side	Modest opportunity: 100 to 200 rooms
Airport Services	Off-Airport Parking for sites close to West Terminal Access. 1,500 to 2000 spaces, surface or deck	not applicable

TRANSPORTATION LINKED ECONOMIC DEVELOPMENT CONSIDERATIONS

Global / Regional Factors

The Chicago Region has a long-standing reputation as a preeminent logistics hub, supported by the array of interstates, seven Class 1 railroads, airports, and about 1 billion square feet of distribution space. The importance of logistics to the region cannot be understated. For example, the number of shipping containers that move through Will County linked with Burlington Northern Santa Fe (BNSF) and Union Pacific (UP) would qualify the county as one of the top five US ports in the US in terms of Twenty-Foot Equivalent units (TEU) handled.

Our experience shows that the region's transportation system will need to adjust to many factors, many of which build from the reality of higher fuel prices and increased interest in containerization of freight. It is also clear that the national freight and logistics framework is in the process of undergoing significant changes, which link with the Panama Canal Expansion. The $5.25 billion expansion of the Panama Canal is set to open in 2015. Once completed, the canal is expected to see an increase in container shipments, which have already grown considerably, from approximately 200,000 in 1995 to more than 4.5 million in 2009.

The impact of the canal expansion relates in part to transit times, which will be enhanced for traffic bound to the US East Coast which would otherwise go through the Suez Canal. While shipment times from Asia to the US West Coast are shorter, the combined impact of rail transit time to the East Coast as well as current inefficiencies and

bottlenecks (i.e., Chicago) in the US logistics system suggest that the Panama Canal will be competitive. From a geographic standpoint, Panama Canal's eastern terminus is further east of New Orleans and the Mississippi River. For the Chicago area, this project has specific rail implications:

- In response to the Panama Canal project, the Norfolk Southern (NS) Railroad recently completed a major upgrade to the Heartland Corridor, which effectively doubled container-train capacity from Norfolk to Chicago. The project raised tunnel clearances in four states, at an estimated cost of $191 million.
- Since 1999 BNSF has invested $800 million to increase capacity on its southern TransCon Line, which now provides double-track service from Los Angeles to Chicago. Their most recent project removed the one remaining single-track section along the southern TransCon route.
- Dust regarding the acquisition of EJ&E by CN has started to settle, allowing for broader thinking about inevitable growth in container traffic through the Port of Prince Rupert to Chicago.
- The CP Acquisition of the DM&E, as well as their December 2012 decision to close their Schiller Park Yard will influence how freight moves through the region with implications for the Bensenville Yard.

These improvements are linked to the CREATE program, a unique partnership between US Department of Transportation, the State of Illinois, the City of Chicago, Metra, Amtrak, and freight railroads to improve how 1,300 average daily trains move through the region. The program is intended to reduce congestion and conflicts between passenger and freight, while improving safety at grade crossings and air quality. The project includes 25 new roadway overpasses and six new rail overpasses. The planned CP grade separation at Irving Park Road is a CREATE funded project.

Implications for Bensenville

The Village of Bensenville's location within the greater Chicago Region is advantageous for higher value manufacturing and distribution, in part with access to a large regional workforce. As such, companies in Bensenville can serve multiple markets – local, regional, and global. The community has unique access to multiple modes of transportation: trucking via nearby Interstate corridors, rail lines, and air via O'Hare.

Connecting these transportation assets with the Northern and Eastern Business Districts can be challenging due to congested arterial roadways. For example, looking at Irving Park Rd, truck traffic increases from 1,900 west of York Rd to more than 3,100 east of York. ADT for Irving Park increases from 27,500 west of York to 32,600 east of York. According to IDOT, Irving Park Rd carries more traffic than York. Considerations include:

- Arterial roadways, IL Route 83 and York/Elmhurst Roads, are critical to the industries in the Northern and Eastern Business Districts.
- Local rail service remains important for industries, and will be a critical competitive advantage in the future.
- The proximity of regional and North American rail service connections is important for area industries, generally finding means to adjust for local area rail congestion, particularly as containerization increases.
- Industries use proximity to O'Hare International Airport in scheduling deliveries to meet customer requirements.
- Freight forwarders/integrators facilitate the movement of goods across the Midwest through O'Hare International Airport, and on to overseas flights.

TRANSPORTATION LINKED OPPORTUNITIES

Chicago is one of three places where all seven Class I railroads meet. Three of the Class I railroads operate in Bensenville (CN, CP and UP). CP's Bensenville Railyard provides support for local switching service as one line of business, a feature that is very important to industries that need access to this type of service on a regular and intermittent basis. Further developing a strategic alignment with the CP can allow both parties to plan short-term and long-term improvements that support their shared goals and service characteristics. Examples include:

- The CP recently signed a 10-year memorandum of understanding (MOU) with the province of Manitoba, Canada. The MOU supports Manitoba's International Gateway Strategy, of which the CP is a partner. The collaboration is intended to promote roadway and railway planning and improve the efficiency of the overall supply chain. It also includes the development of rail transportation logistics into CentrePort Canada, a new inland port.
- In Illinois, Centerpoint Properties developed two inter-modal facilities near I-55 and I-80 capitalizing on existing Class I railroad infrastructure – one in Elwood (BNSF) and one in Joliet (UP). The Elwood facility includes the BNSF - integrated logistics center (also known as a freight village). This type of development is an industrial park constructed around high performance freight servicing facilities. These developments relied

on partnerships between the developer, the railroads, municipalities and other governmental agencies. This project is also an indicator of one challenges faced by larger distribution oriented projects, fewer jobs.

As evidenced by the recent Joliet and Elwood intermodal center developments, intermodal rail has been the fastest growing major segment of the US rail industry for many years. Part of this growth has been the increasing use of intermodal rail to move containerized international freight through port cities to distant inland and trans-continental destinations and for long haul domestic freight.

As another example, awareness of growing congestion in northern New Jersey led the New Jersey Transportation Planning Authority (NJTPA) to study the option of redeveloping abandoned and under-used industrial sites, brownfields, for freight purposes. They determined that this strategy could result in benefits for the state. By redeveloping brownfield sites near the port and airport, it will provide companies with an alternate option to developing new sites.

Maintaining freight activity near the core of industrial sites could result in fewer vehicle miles traveled and reduced industrial sprawl. The challenges faced with redeveloping brownfields include high remediation costs, lack of coordinated government initiatives and the environmental regulatory process.

Bensenville's location and regional roadway network may enable area industries to benefit from these and other regional intermodal facilities without a large intermodal facility nearby. Facilities within Bensenville's business districts are already conducting intermodal operations. For example, several of the existing sites have goods delivered via rail and then leave on trucks. Existing and future intermodal operations are important to the continued vitality of the Northern Business District. Bensenville can sustain the dialogue and work with other entities to foster efficient delivery of rail cars to sites in the business districts and ensure that trucks can maneuver into and around the industrial area.

One concept for increasing rail and truck access within the site is to increase the utilization of transportation infrastructure investments where opportunities arise. Shared use of critical yet intermittently used infrastructure is one way to increase operational effectiveness for the same investment dollars. The shared road rail use of industrial right-of-way is one potential concept. Where a road or rail segment simply provides through access to other transportation links and industrial sites is one example. On-street running tracks are railroad tracks laid down the center of a roadway. While this approach allows for increased utilization of the right-of-way, it is only possible if (1) the volume of trucks and rail cars is low and (2) neither the trucks nor rail cars are stored along this shared right-of-way. The strategy may be the most effective and appropriate where the corridor traverses largely industrial areas where traffic is more readily aware of rail and truck operations. Within the Northern Business District, only the east-west spur north of Foster would be characterized as a potential option for implementing on-street running track.

Another truck related consideration is focused on the connection between IL Route 83 and Irving Park Road. The State of Illinois classifies Irving Park Road and the interchange with IL Route 83 as an Over-weight Truck Permit Route, which carries approximately 1,200 to 1,900

trucks per day. IL Route 83 crosses Irving Park Rd above grade, connecting at Brookwood Drive. The connection forces trucks along residential streets in this area.

Lastly, as the community will continue to be influenced by major transportation projects over the coming 15 to 20 years, there will be a clear need to sustain active monitoring, to identify and mitigate congestion along arterial roadways, particularly along York, and maintain effective access points and traffic flow within the Northern and Eastern Business Districts. Taken together, the net effect of these actions will be an efficiently-working supply chain that will result in employment growth.

AVIATION TRENDS

Since the OMP was announced, there has been tremendous interest in the Western Terminal proposal. Current policy guidance is that this facility will be a market linked effort, driven by one or more airlines that will need to commit to anchor the project. Our experience shows that the future development of this new terminal is linked with an array of factors, all of which begin with the tumultuous history of the Airline Industry since deregulation. Although the world has changed profoundly since deregulation, many of the issues that the industry faces today remain arguably the same: the impact of Deregulation; Higher Fuel Prices, Low Cost Carriers; and Industry Consolidation

Clearly, deregulation allowed individual airlines to make route and fare decisions on the basis of economics and competitive advantage. As a result, national carriers began to rethink access to, or withdraw completely from short-haul markets. This pattern began soon after deregulation, as aviation fuel prices escalated due in part to the Persian Gulf War/crisis in 1979. Since the average cost of fuel used per mile for all aircraft decreases as distance traveled increases, the rapid increase in jet fuel costs, primarily after December 1978, made short-haul flights in smaller markets increasingly unprofitable. More importantly, as fuel prices increased, operating costs for older, fuel-inefficient aircraft increased substantially, rendering almost 25% of jet aircraft capacity in the country obsolete by 1980.

The 1985 to 1989 period was marked by additional refinement of the airport hub concept. One innovation was code-sharing, which allowed regional airlines to associate themselves with a national carrier by sharing computer reservation codes, which streamlined the reservation process. The national carriers further integrated themselves with regional carriers through acquisition of equity positions or outright purchase. As a result, national carriers were able to improve efficiency by allocating a greater share of their short-haul markets to associated regional carriers. Re-allocation of air routes to regional carriers, particularly after 1985, allowed the regional airlines to grow rapidly as travel demand increased.

Overall, the first 12 years after deregulation were marked by dramatic growth in the airline industry as demand for air travel expanded rapidly in response to increased personal income and strong overall economic growth nationwide. Scheduled airport enplanements increased from around 300 million in 1980 to roughly 450 million in 1990. Growth in regional carrier enplanements was more dramatic, increasing from roughly 13 million in 1980 to almost 38 million by 1990. The dramatic increase in enplanement activity drove demand for both new aircraft

and increased market share. By 1990 the eight largest national carriers (United, Delta, American, Northwest, Continental, USAir, TWA, and Pan Am) had placed orders for over 2,700 new aircraft at a cost of roughly $141 billion. Several airlines, including Northwest, were also purchased by investment groups during the late 1980's as airline industry expansion continued.

Even as travel demand increased, the airline industry was slowly consolidating and adjusting to market forces. Consolidation among regional airlines was strongest as national carriers integrated operations with short-haul regional carriers. Of the 250 regional carriers operating in 1981, only about 159 were operating by 1989. Two national carriers, Braniff and Republic, also fell victim to consolidation by 1990. Republic was absorbed by Northwest Airlines, and Braniff went bankrupt.

1990 proved to be one of several watershed years, beginning with the national recession, which slowed economic activity and reduced demand for air travel beginning in 1990. The invasion of Kuwait by Iraq in the fall of 1990 increased jet fuel prices from fifty-five cents per gallon during the late-1980's to roughly $1.40 a gallon in mid-October of 1990. Although the airlines tried to pass the 150% increase in fuel costs onto the consumer via higher ticket prices, a recessionary economy and the fear of terrorism made such increases unrealistic, since the public was generally unable or unwilling to travel. Although individual airline companies responded by sharply reducing ticket prices to induce greater travel activity, the initial result was to plunge the industry into serious debt.

These factors drove a second round of industry consolidation, with Pan American, Eastern, and Midway Airlines being dissolved, and Continental, America West, and Trans World Airlines entering bankruptcy. The major full-service carriers, Delta, American, and United, survived primarily because their larger size allowed for increased resiliency against economic downturns. Even so, all carriers were forced to cut costs and delay or cancel new aircraft orders after 1990.

Increasing fuel costs and airfare wars proved to be only the first of several closely related challenges that the industry would face by 1995. The new challenges, including overcapacity and significant changes in the public's air travel tendencies, combined to alter the economics of air travel to a large extent and allowed a new type of airline to enter the marketplace: the "low cost" carrier.

Overcapacity emerged in the 1970's when the introduction of wide-body aircraft increased the number of available seats in relation to demand. The problem of overcapacity re-emerged by 1990 for several reasons:

- Between 1990 and 1993, Delta, United, and American increased capacity by a reported 35%, and smaller carriers on generally less stable financial ground increased capacity by roughly 10%, despite the recession.
- Rapid oil price increases and airfare wars forced several airlines into bankruptcy protection. Roughly one-fourth of total industry capacity was under Chapter 11 by 1993.
- The surplus of aircraft on the market after 1991 drove acquisition and lease prices for older aircraft down considerably.

Overcapacity was magnified by a basic change in the public's air travel tendencies. Historically, the airlines relied on business travelers paying full fares to subsidize leisure travelers using discount fares. According to the Economist, such "high-yield" passengers would typically make up only about 20% of passengers on any given plane but provide about 66% of total revenue.

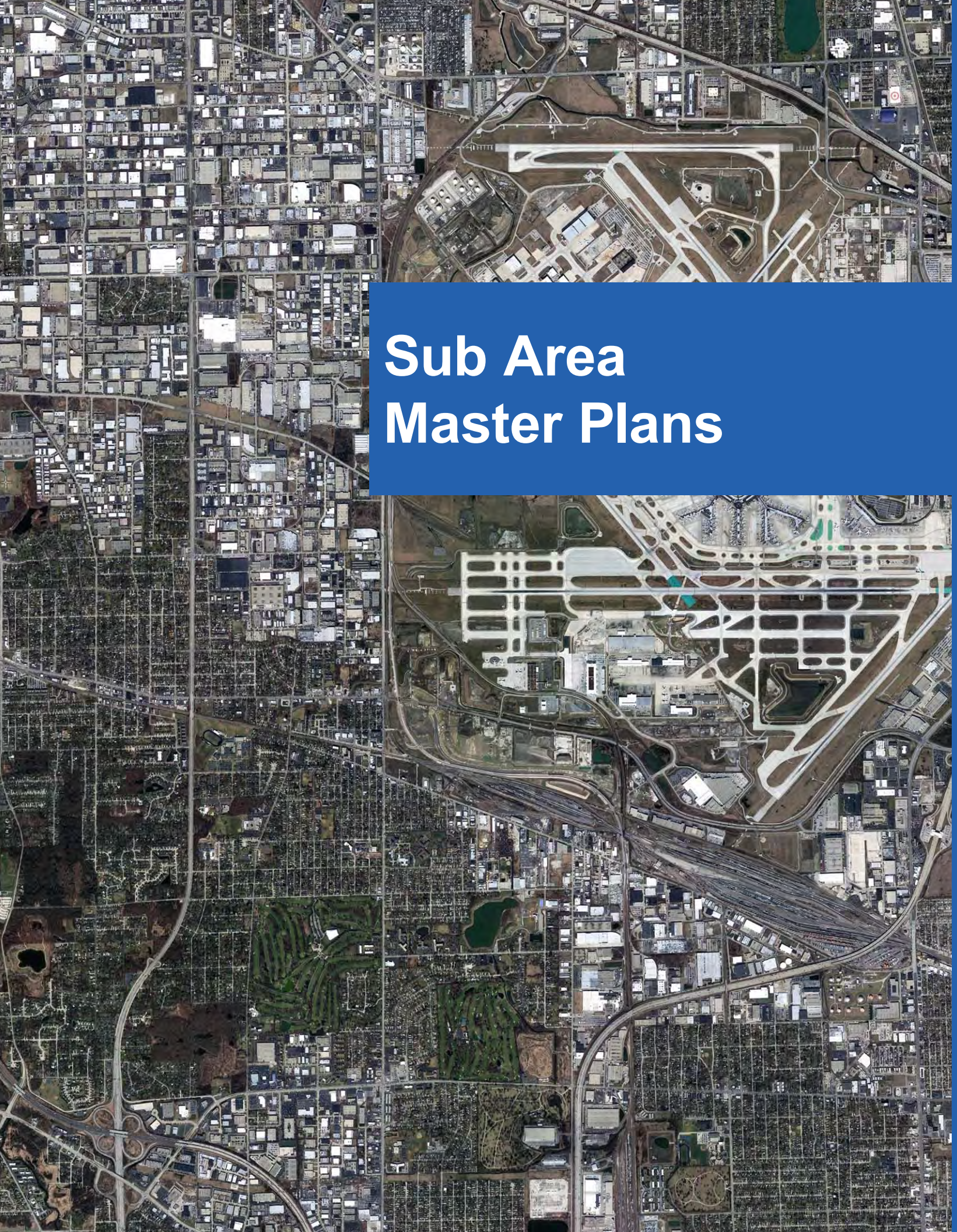
By 1990, however, the business travel market was getting consistently smaller as the recession forced companies to down-size and cut costs. New advances in teleconferencing and fax communications also reduced the number of overall business trips. The full-service airlines' financial

state began to deteriorate as the costs of providing full service were increasingly unsupported by the lower fares paid by price sensitive leisure travelers. Although the number of leisure travelers as a percentage of total airline traffic increased to fill the gap after 1990, the increased price sensitivity of leisure travelers did not allow established airlines the flexibility to increase fares, because competitive forces in the industry had strengthened. Increased competition in the industry after 1991 was fostered by the interaction of overcapacity and increased leisure travel price sensitivity, which created a conducive environment for "low cost" airlines such as Southwest, to emerge.

Clearly, since 2000 the airline industry has continued to evolve, with industry consolidation and mergers, new pricing strategies, and on-going challenges of managing fuel costs. In many ways, challenges that have unfolded since 2000 are no different from issues faced by the Airline Industry after deregulation, particularly during the 1990's. Looking to the future, experience suggests the following key themes will impact future opportunities:

- The gradual evolution of low cost carriers (LCCs) such as JetBlue, Frontier, and Southwest into mature mainline carriers. For Southwest in particular, its recent acquisition of AirTran and ATA reinforce this trend.
- The evolving impact of recent mainline carrier mergers (Delta / Northwest and United / Continental) on host airports.
- Evolution of smaller regional carriers (Comair, United Connection, Mesaba, etc.), and relationships with their mainline carriers.
- Impact of higher fuel costs on airline industry competitiveness,
- Emergence of new and significantly quieter and more fuel efficient aircraft, as well as initial debate about the environmental impact of air travel. In this context, American Airlines plans to replace their existing MD-80 fleet with newer and quieter Boeing 737's is notable. Emergence of smaller "regional" jet aircraft, built by firms such as Embraer, which are seeing increased market share.
- Recovery in air cargo, and likely competition with other US airports for expected growth in Asian cargo flights.
- Local factors include debate about Chicago's 3rd airport site in Peotone, as well as evolving plans to expand Gary's airport. Rockford International Airport and Milwaukee also factor into the regional air travel equation.
- Policy debate over high speed rail implementation in the Midwest, and its plausible ability to capture market share from air travel for regional trips.

One clear factor that ties all of these elements together is the rate of recovery from the recession. For the airlines, aside from specific concerns about fuel prices, the industry appears to be in a better position to recover now compared to past years, with less over-capacity and more fuel efficient aircraft, which should bode well for revenue growth as the recovery strengthens. For Bensenville, the pace of recovery in aviation will be a significant factor in future planning for the Western Terminal.



Sub Area Master Plans

Sub Area Master Plans

The Comprehensive Economic Development Strategy effort includes sub area master plans for the following Sub Areas:

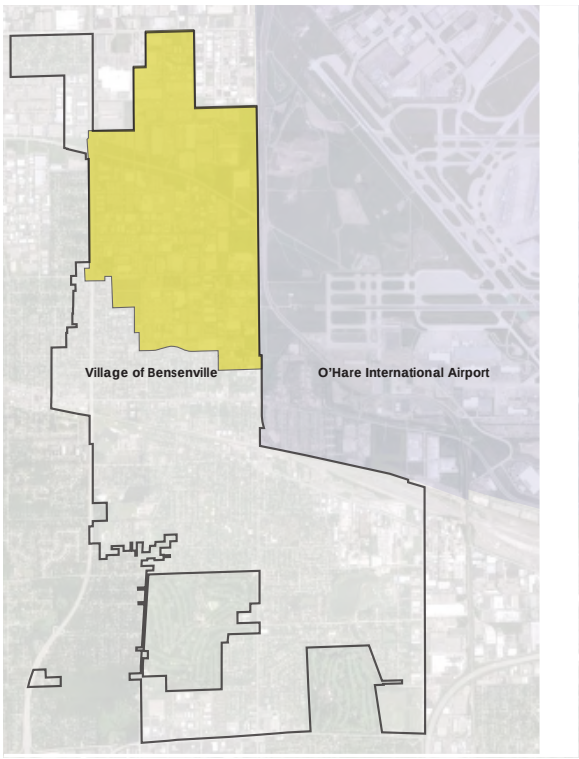
- Northern Business District
- Mid-Town / Irving Park Corridor
- Downtown Bensenville
- Eastern Business District

Each sub area plan includes discussion of existing conditions, covering transportation, real estate, and planning factors. This research is used to shape planning and urban design recommendations for each area

Northern Business District

NORTHERN BUSINESS DISTRICT

Guiding Principles



- Upgrade and revitalize existing industrial building stock
- Anticipate shift in demand from pure distribution to higher-value flex and office showroom space
- Prepare for land use change along the key commercial corridors of Thorndale Avenue and York Road, linked with timing for the EOWA and the proposed Western Terminal
- Remain flexible on zoning
- Consider identified north-south access improvements to improve connectivity with downtown
- Move away from outdoor storage as a permitted use

NORTHERN BUSINESS DISTRICT

Existing Conditions

AECOM completed an in-depth existing conditions analysis for the Northern Business District to better understand all aspects of the district from a planning, access and economic perspective. This analysis will set the stage for an array of revitalization recommendations.

The Northern Business District covers a larger area, more than 630 acres of developed land, improved with about 27 million square feet of space.

Given the importance of the Northern Business District to the community in terms of tax base and employment, this analysis includes a greater level of detail than the other sub-areas; it addresses real estate values, ownership, occupancy type, and building conditions for key facilities. Further, access and circulation are addressed through an evaluation of the existing street framework, which identifies opportunity for improved connectivity.

The base diagrams shown on following pages assume that the proposed EOWA alignment is the configuration that will be implemented. The proposed alignment is shown on all diagrams.

When analyzing existing building stock within the Northern Business District, a variety of building features were evaluated. Through this analysis, several indicators were identified as framing the overall picture of building conditions; diagrams illustrating each indicator are provided on the following pages.

It is clear that planned improvements associated with the EOWA and Western Terminal present an opportunity to create a more competitive Northern Business District by improving the access to O'Hare and the regional transportation network. To capitalize on these improvements, the district will need to improve its internal street network. The district's street network was not designed as part of an overall plan, but rather developed in a piecemeal fashion over the years. As a result the street pattern has become disjointed and circuitous and difficult to navigate. Issues include:

- Limited access to the major roadways bordering the district
- Limited North - South connections to Irving Park Rd.
- Very few streets providing continuous connections through the district. Only Foster Ave. provides a straight East -West connection between IL Route 83 and York Rd.

In addition, the planned EOWA alignment down the Thorndale Avenue corridor will substantially alter the connections between the north and south areas of the district. On the positive side, it will provide excellent access and visibility. On the downside, the highway will further divide the district.

NORTHERN BUSINESS DISTRICT

Building Conditions

The following diagrams illustrate building conditions within the Northern Business District.

TOTAL BUILDING AREA

The Building Area diagram illustrates building footprints classified by square footage. For the purposes of this analysis, 60,000 square feet was the threshold identified for evaluating building area, based on our analysis of industrial building data provided by COSTAR and the local township assessor. More recently constructed buildings tend to have significantly larger footprints, as apparent when comparing Total Building Area diagram with the Date Constructed diagram.

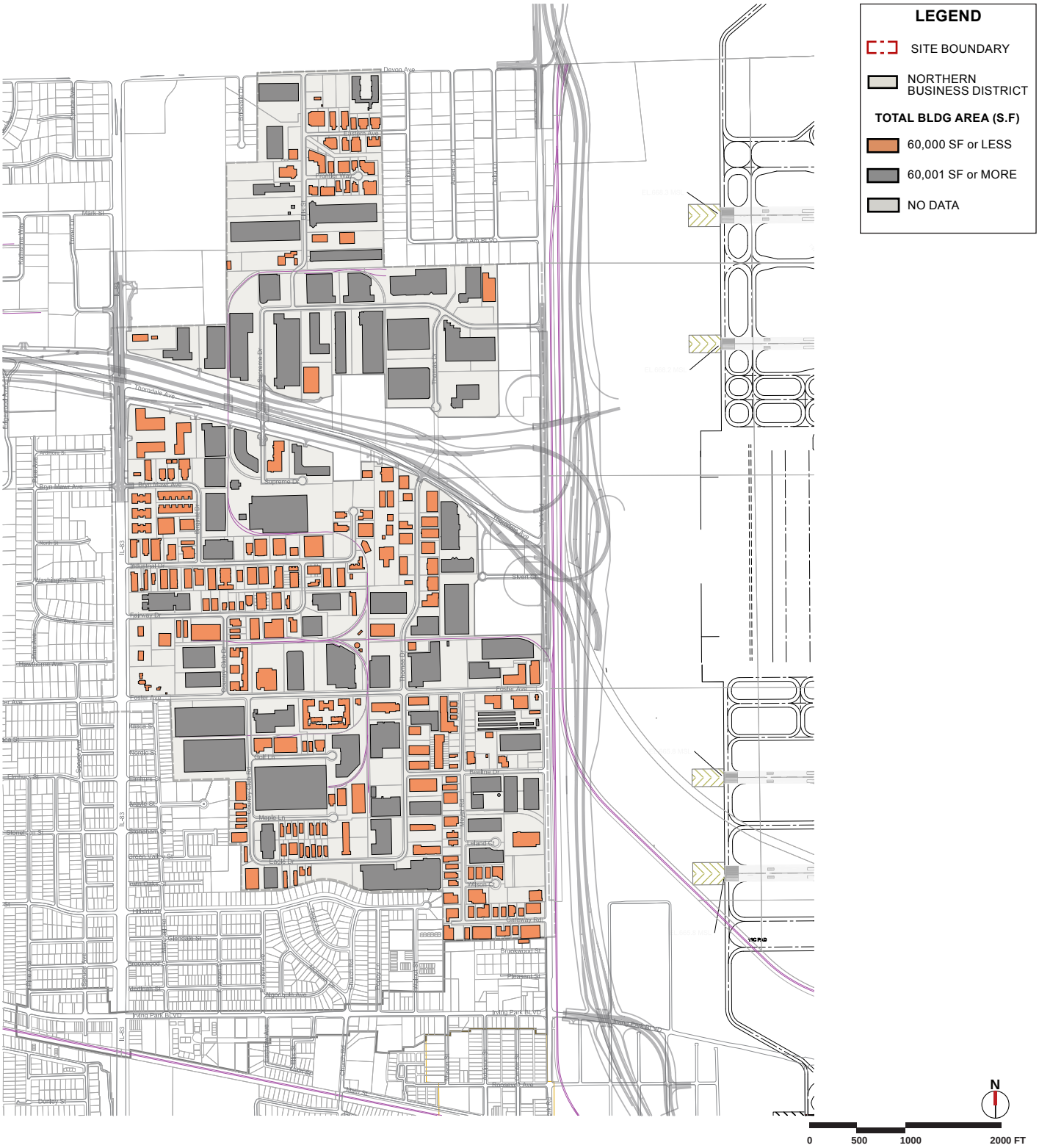
DATE CONSTRUCTED

The Date Constructed diagram illustrates building age, classified before 1979, then for each decade through the early 2000s. The area north of Thorndale Avenue was almost entirely developed after 1979, with few exceptions. The reverse is true for the area south of Thorndale, where most buildings were completed before 1979, and there has been extremely limited redevelopment since 1990.

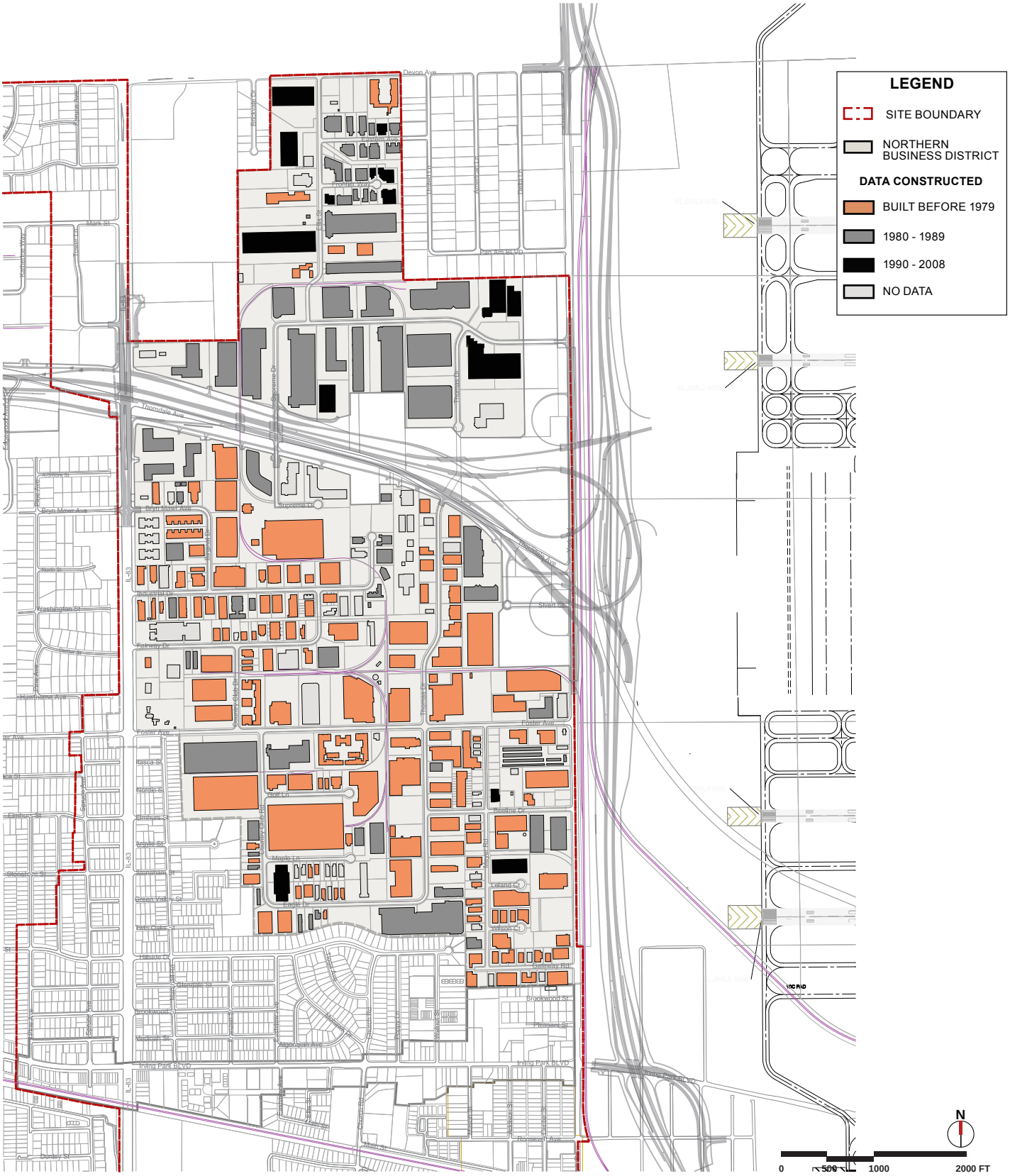
CEILING HEIGHT

Building ceiling height is considered as an indicator of flexibility for a range of industrial uses. Optimal conditions are considered to include ceiling heights over 25'; buildings with ceiling heights above 20' are considered flexible. Buildings with ceiling heights of 14' - 20' have some flexibility for industrial use, whereas heights below 14' are generally undesirable for modern industrial use.

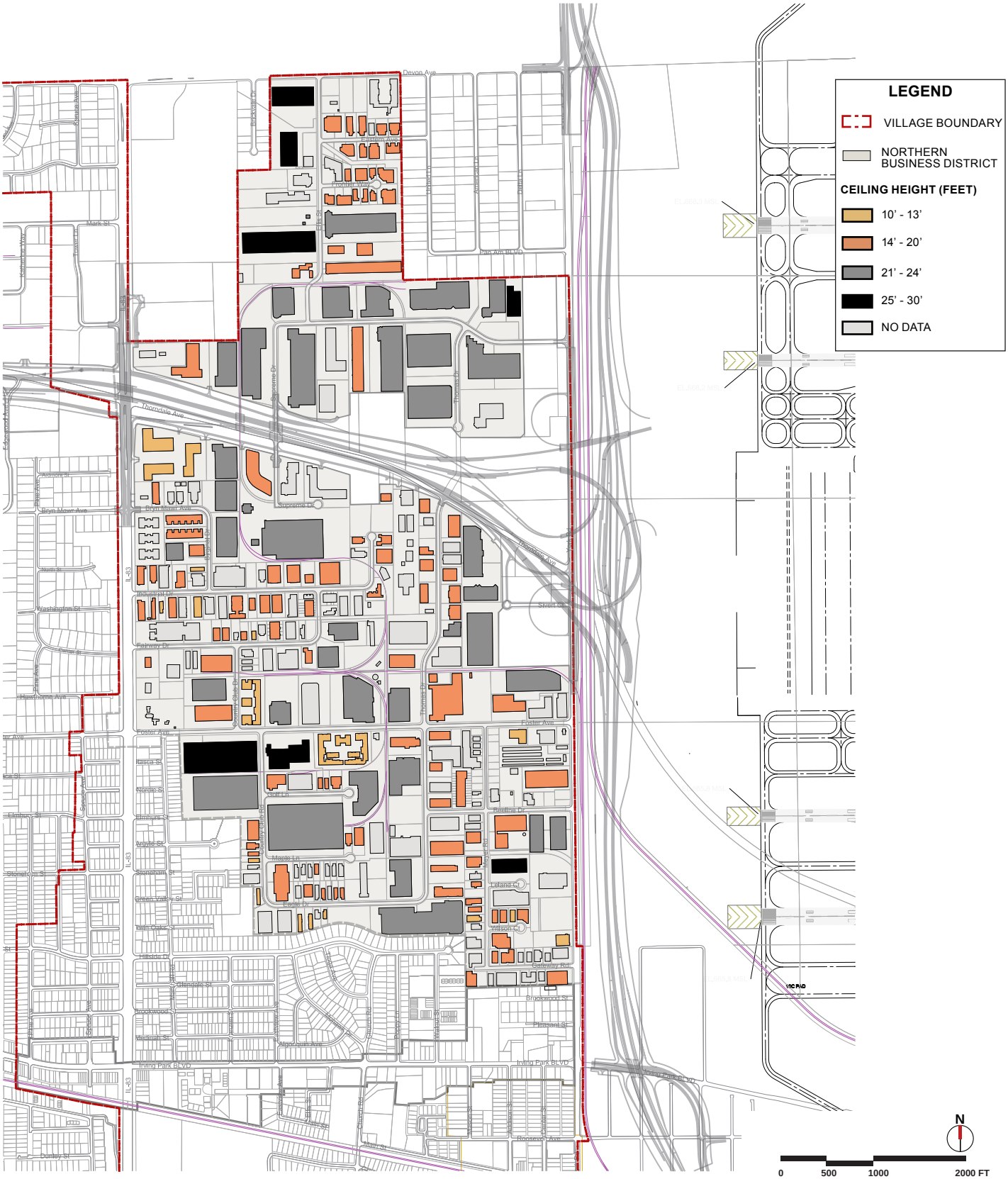
TOTAL BUILDING AREA



DATE CONSTRUCTED



CEILING HEIGHT



NORTHERN BUSINESS DISTRICT

Property Values and Ownership

Existing conditions in the Northern Business District

The following diagrams illustrate property values and ownership within the Northern Business District.

LAND VALUE / TOTAL VALUE

The Land Value / Total Value diagram provides an indicator for building condition, as reflected in the relationship between land value and building value as a percent of total property value. Typically, for buildings that are "performing well" land value represents about 20% of overall property value. In general, when land values begin to exceed this threshold, it can be an indicator that the improvements are under-valued. The analysis shows that most of the parcels in the study area are valued at above 20%. Therefore, the benchmark shown here is revised to more effectively identify under-performing buildings with a land value over 40% of the total property value.

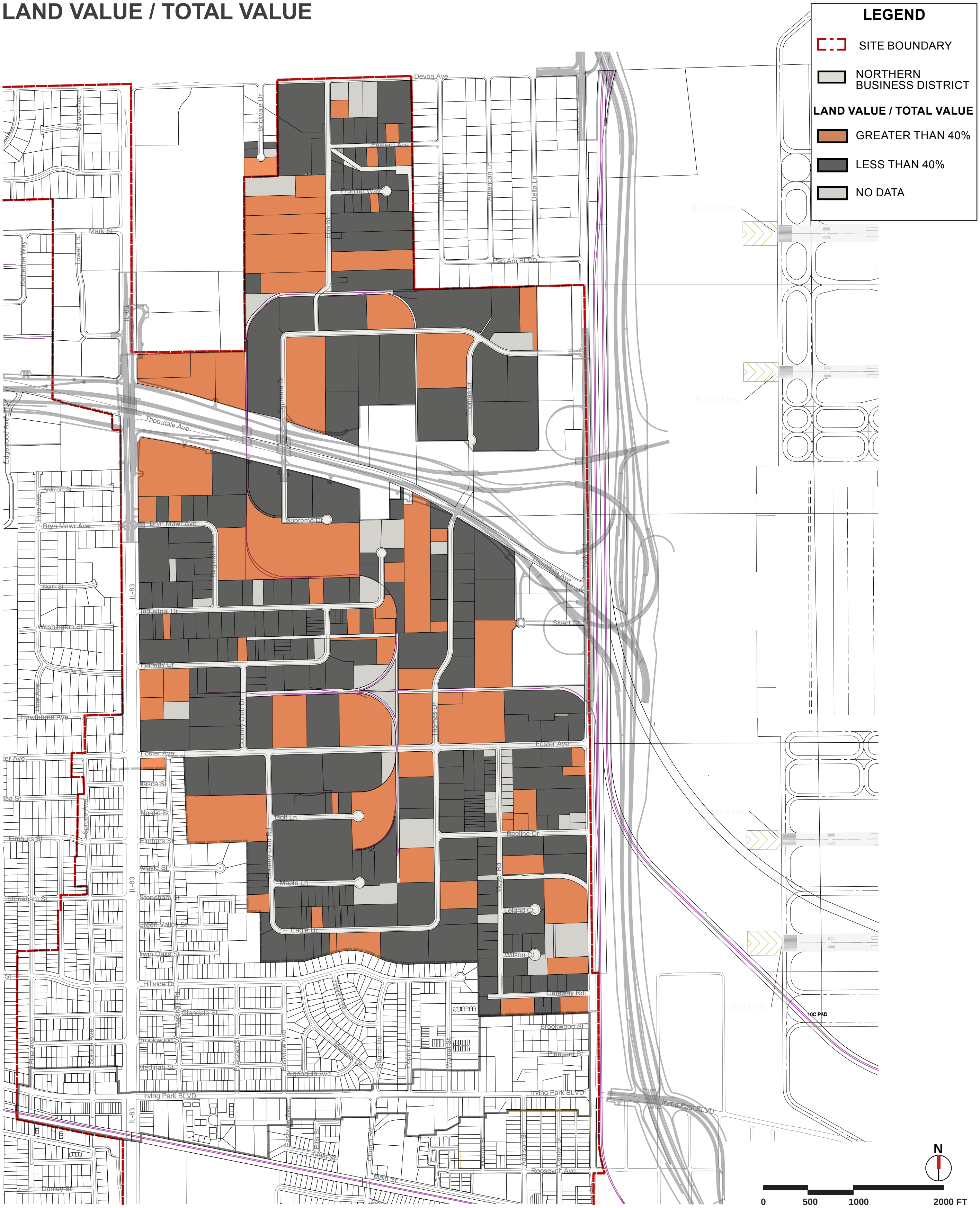
While this diagram is effective for identifying large parcels that are under-performing in an industrial setting, it presents inconsistencies when evaluating other building type. For example, smaller parcels with higher built square footage per lot area appear to be well performing in this analysis, compared to warehouse industrial uses with large parking and loading areas, which may not be accurate.

These data should be considered in the context of the building condition findings for a more complete picture of the different building types and contexts.

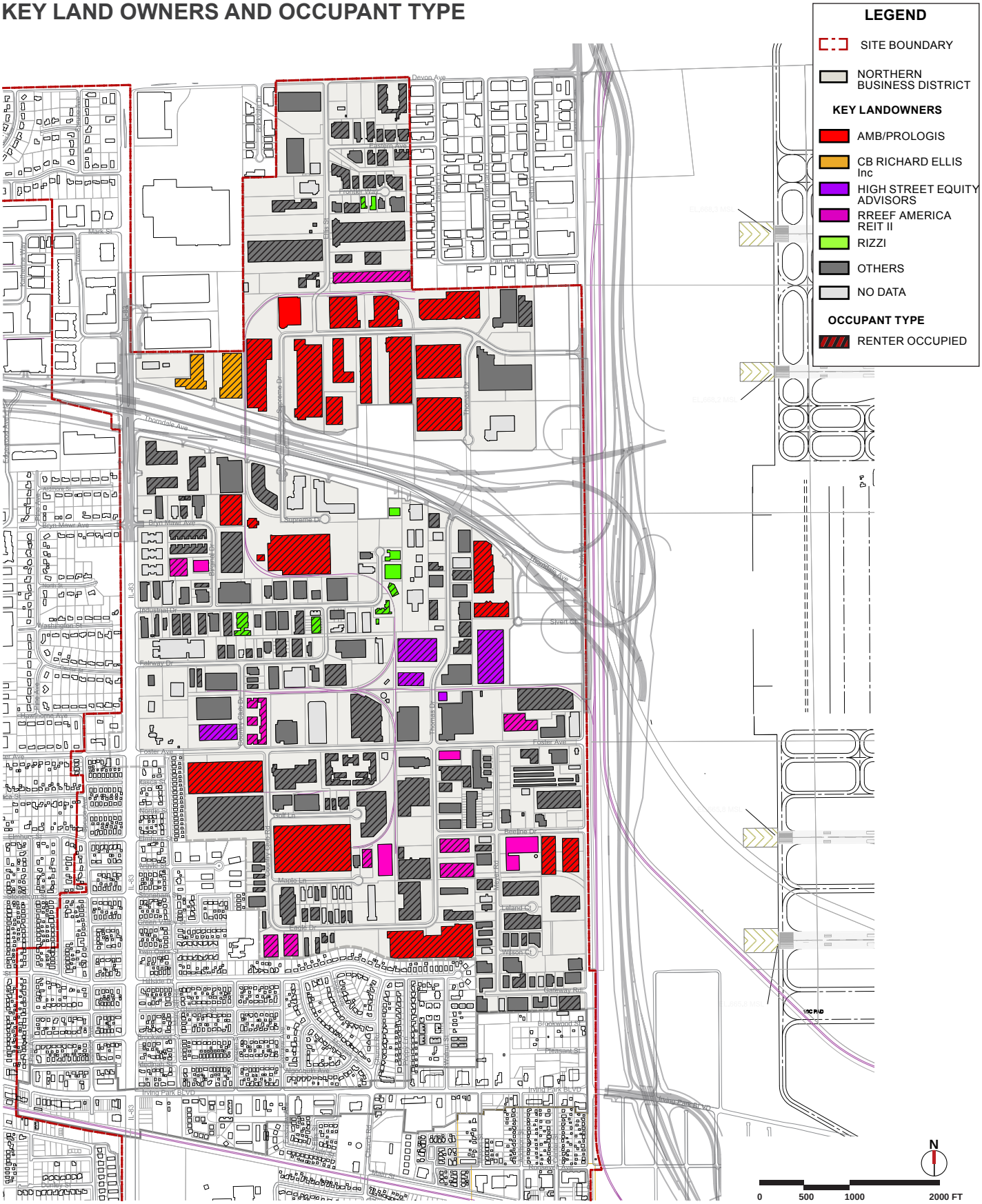
LAND OWNER AND OCCUPANCY TYPE

The Key Land Owner diagram identifies property owners within the district that own multiple parcels. Occupancy type highlights the buildings that are renter-occupied, which may be an indicator of potential for reuse or for vacancy in the near term. Long-term small-business ownership is reflected in smaller, owner-occupied buildings.

LAND VALUE / TOTAL VALUE



KEY LAND OWNERS AND OCCUPANT TYPE



Street Framework and Connectivity

AECOM completed an analysis of the existing street framework for the Northern Business District to support recommendations to access and circulation. This is particularly critical given the planned EOWA route along Thorndale Ave. Diagrams presenting the analysis are provided on the following pages. All diagrams illustrate the existing components of the street network, including primary roads, both arterial streets and key access streets, as well as secondary roads which typically dead-end or loop back to themselves. The railroad network is also shown. Planned interchanges are noted.

EXISTING STREET FRAMEWORK

The existing street framework diagram illustrates current access and circulation through the district. The street network is relatively circuitous, with very limited north /south connectivity through to Irving Park Rd and Downtown.

EXISTING BUILDING CONDITION COMPOSITE

This diagram illustrates the existing street framework, with planned bypass interchanges and building value data overlaid. The goal is to provide recommendations that enhances connectivity and site access, while avoiding impacting newer, higher-value buildings with active uses wherever possible. The building data is a composite of the Building Conditions diagrams, highlighting the following aspects for a building that might influence reuse:

- Year Built before 1979
- Ceiling Height below 20'
- Building Area 60,000 sf or less

Buildings shaded light orange include one or two of these features, and buildings shaded dark orange have all three features present and should therefore be evaluated further for future redevelopment opportunity.

CONCEPTUAL STREET FRAMEWORK

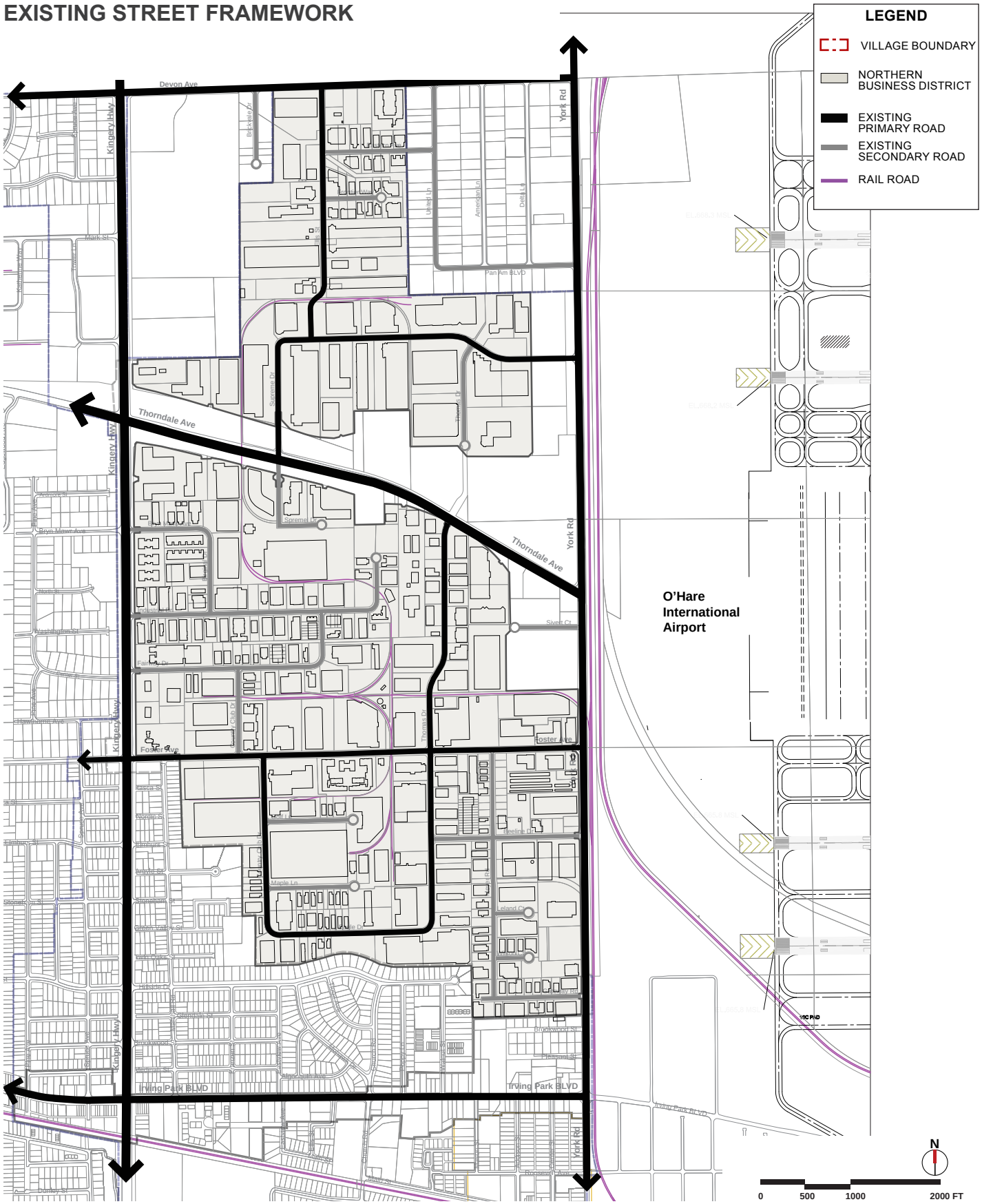
These street framework diagrams illustrate conceptual recommendations for improving access. Street connections linking Supreme Dr. to Country Club Dr. and extending Meyer Rd to both Thorndale and Irving Park Rd. would strengthen north/south connections and accessibility to and through the site.

PROPOSED STREET FRAMEWORK

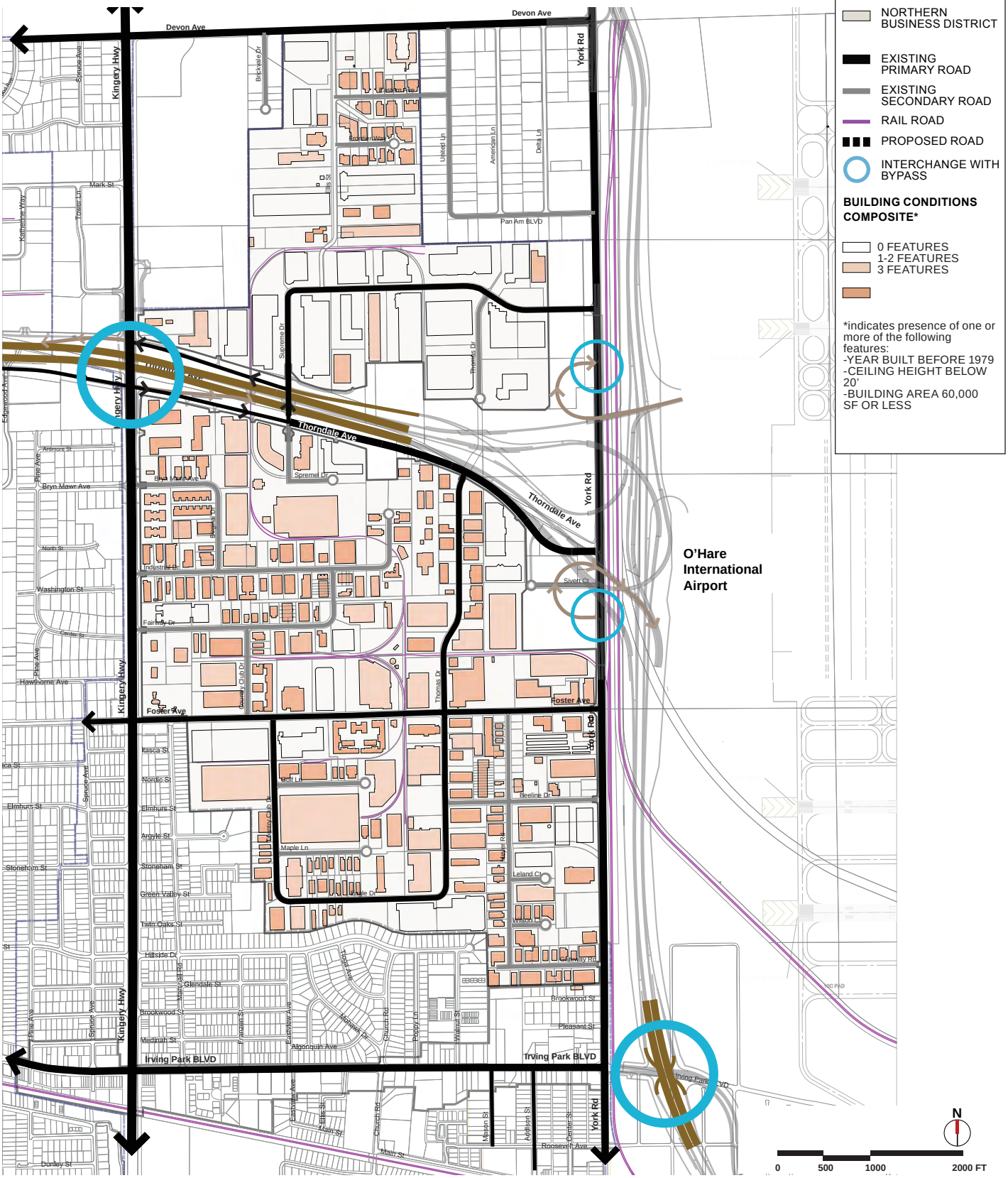
Building off the existing conditions analysis, including building condition, building and land value, and other factors outlined above, the proposed street framework diagram recommends street connections that create the least impact, in accordance with the conceptual street framework.

The plan incorporates the planned EOWA improvements, including the on/off ramp locations at IL Route 83 and Thorndale Ave., Irving Park Rd. and York Rd., and the proposed ramps to the Western Terminal at York Rd. and Thorndale Ave. Since these ramps will become the primary destination for a significant portion of the business park traffic, the plan targets improved access to these locations.

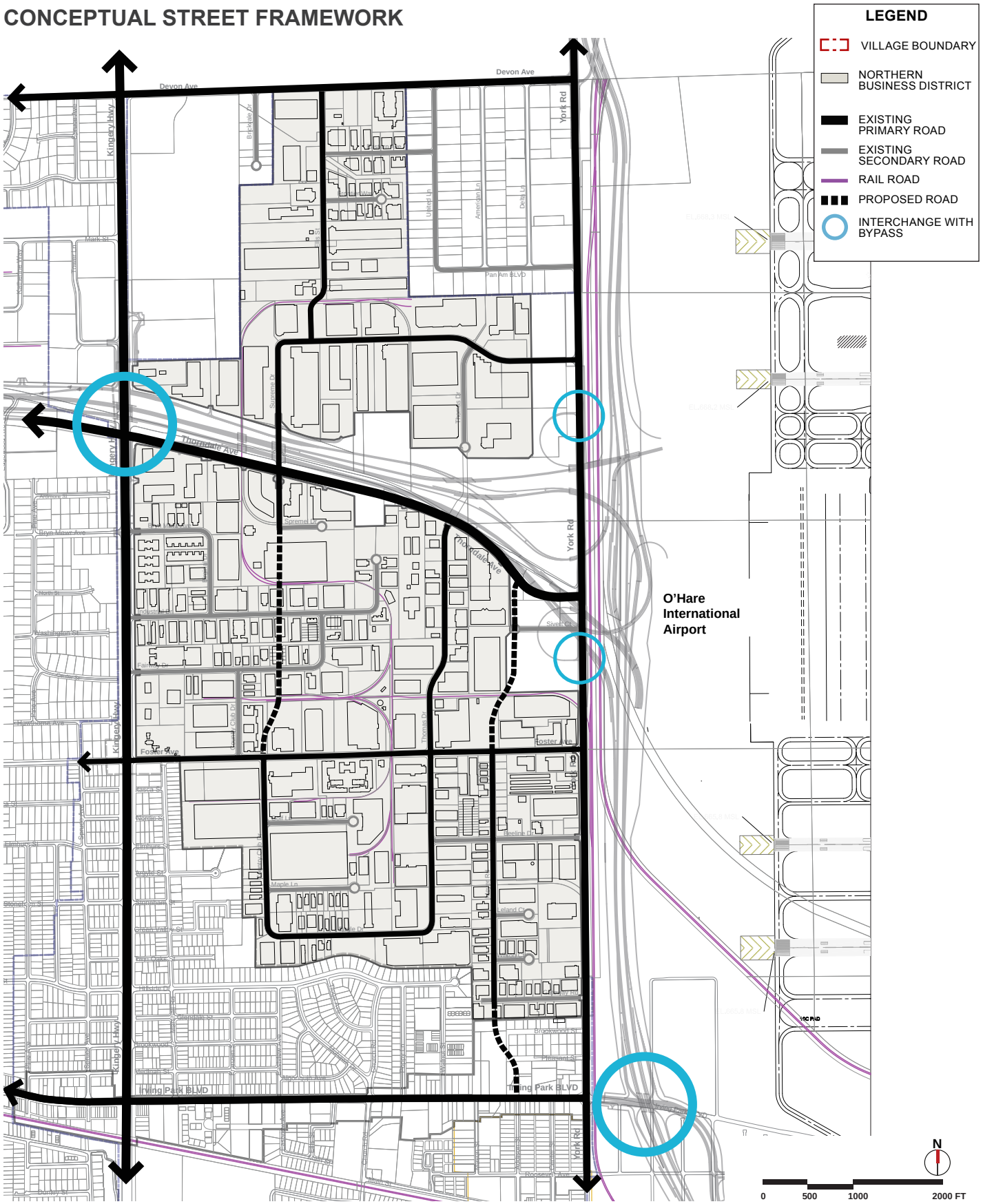
EXISTING STREET FRAMEWORK



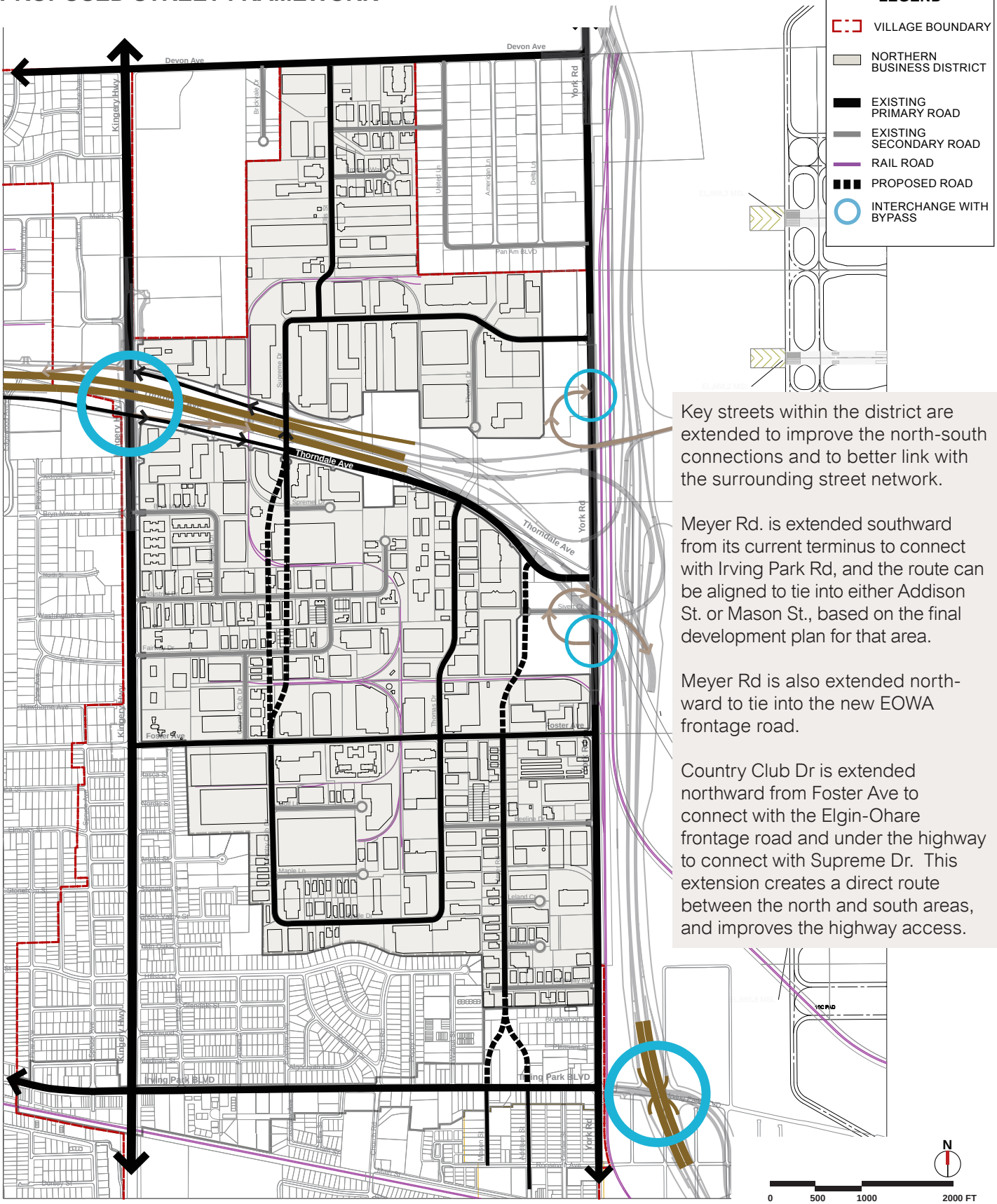
EXISTING STREET NETWORK + BUILDING CONDITION COMPOSITE



CONCEPTUAL STREET FRAMEWORK



PROPOSED STREET FRAMEWORK



Key streets within the district are extended to improve the north-south connections and to better link with the surrounding street network.

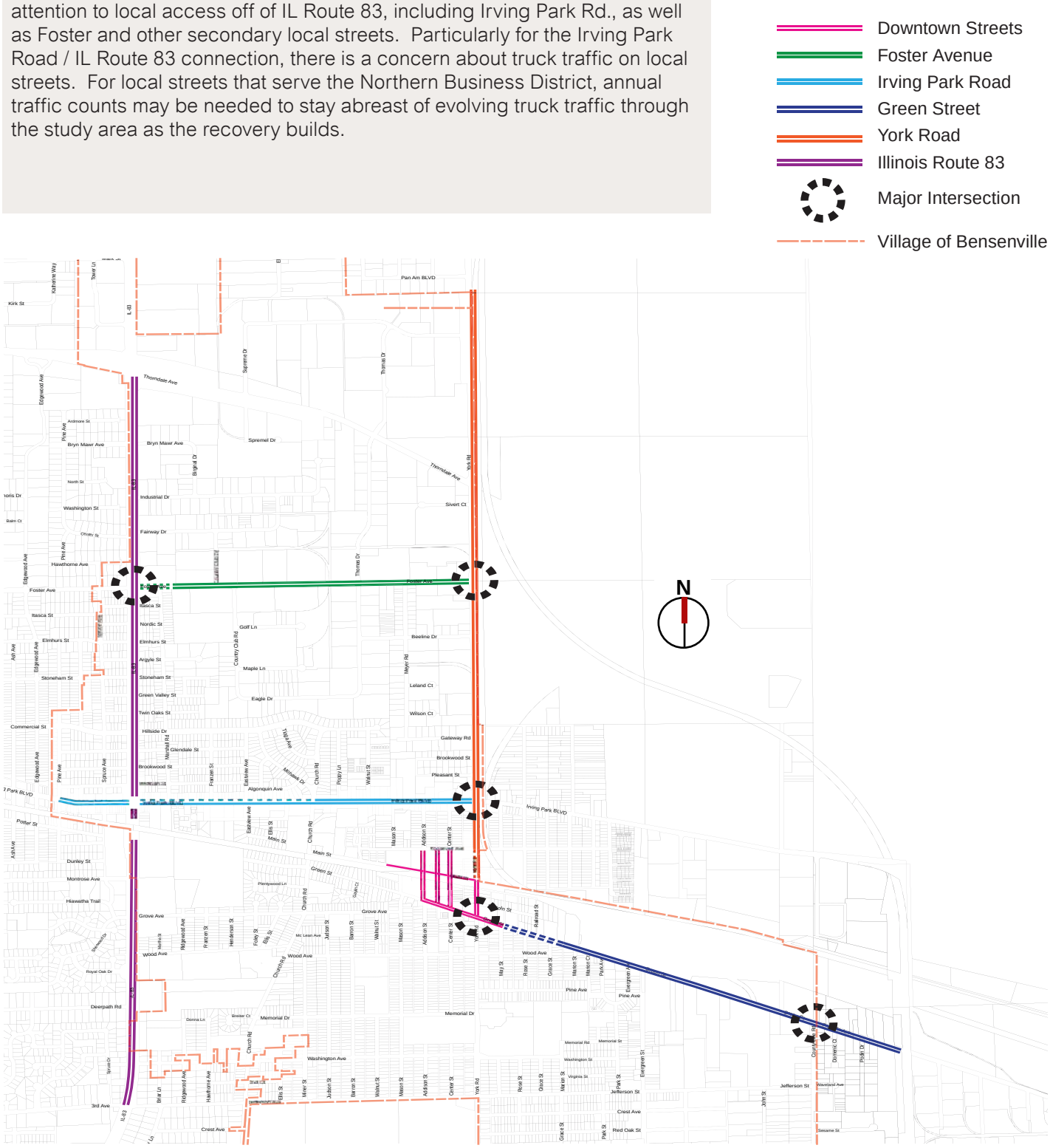
Meyer Rd. is extended southward from its current terminus to connect with Irving Park Rd, and the route can be aligned to tie into either Addison St. or Mason St., based on the final development plan for that area.

Meyer Rd is also extended northward to tie into the new EOWA frontage road.

Country Club Dr is extended northward from Foster Ave to connect with the Elgin-Ohare frontage road and under the highway to connect with Supreme Dr. This extension creates a direct route between the north and south areas, and improves the highway access.

LOCATIONS FOR RECOMMENDED STREET AND INTERSECTION IMPROVEMENTS

The plan identifies a number of critical intersections that will require further improvement, based on how final plans for the EOWA and Western Terminal evolve. The analysis suggests that Village officials will need to play close attention to local access off of IL Route 83, including Irving Park Rd., as well as Foster and other secondary local streets. Particularly for the Irving Park Road / IL Route 83 connection, there is a concern about truck traffic on local streets. For local streets that serve the Northern Business District, annual traffic counts may be needed to stay abreast of evolving truck traffic through the study area as the recovery builds.

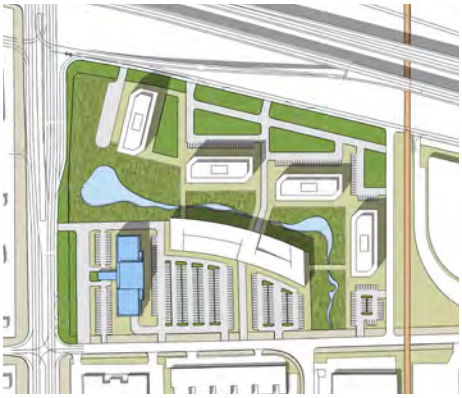


NORTHERN BUSINESS DISTRICT

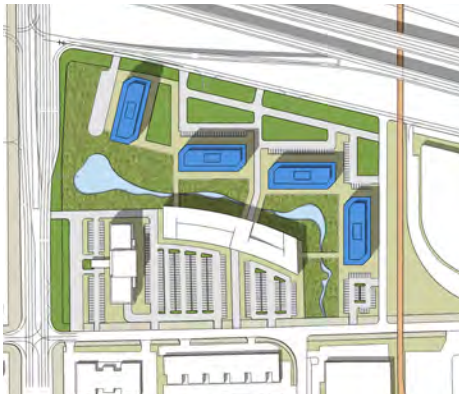
Office Development at Thorndale Avenue and IL Route 83

This proposed development site is located at the south-east quadrant of IL Route 83 and Thorndale Ave. The proposed progam includes about 500,000 sf of office space and a hotel, covering about 180,000 sf. This conceptual proposed progam includes open space, structured parking, and stormwater management elements. The site is currently improved with a single-story office development

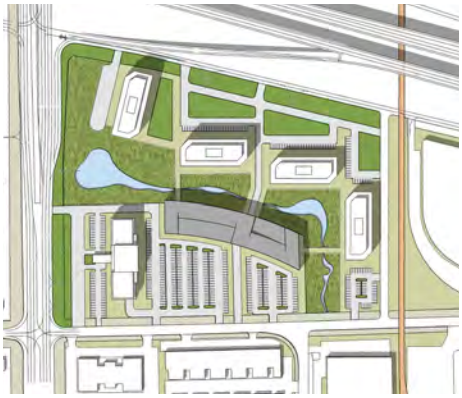
REDEVELOPMENT PLAN



Hotel



Business / Office



Parking Structure

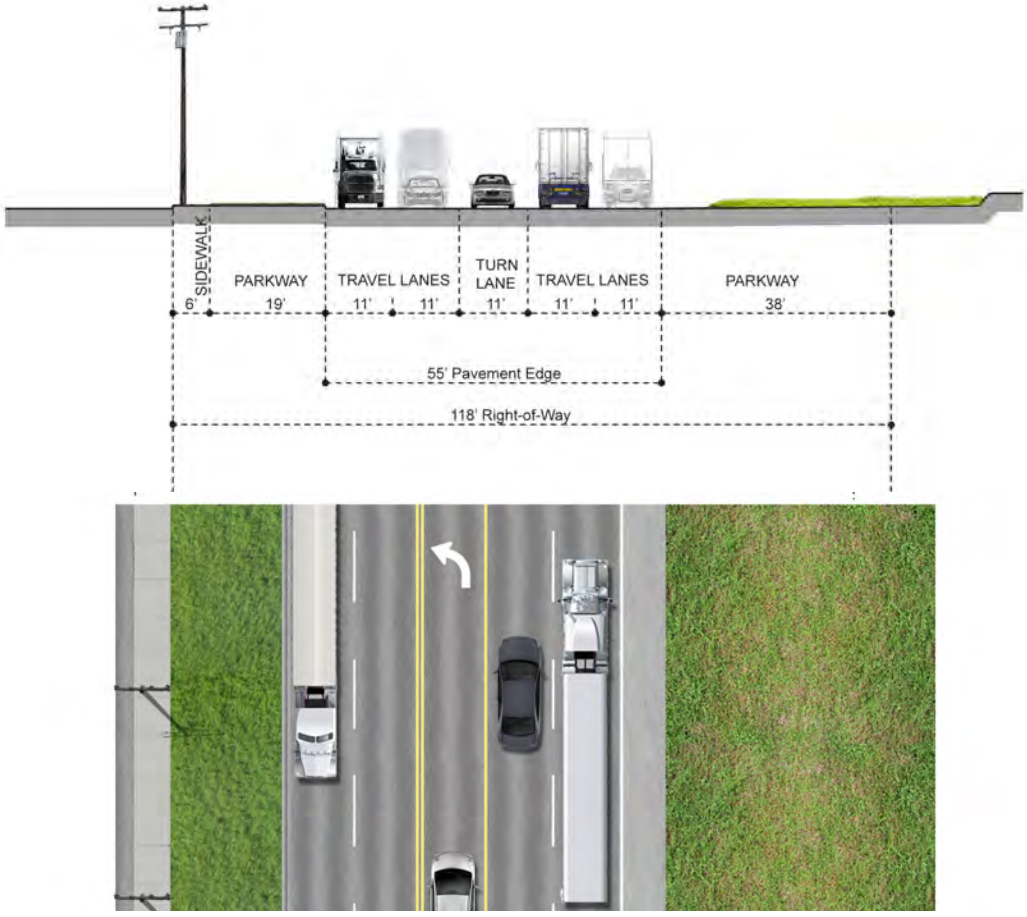
NORTHERN BUSINESS DISTRICT

York Road Streetscape Plan

York Road is one of the main north-south arterials in Bensenville. The corridor is flanked to the east by an active railroad corridor for both CP and UP freight trains, as well as traffic associated with O'Hare International Airport. Truck traffic, train engine, and aircraft noise are all significant.

The general character of the western flank of Irving Park Rd. is focused on industrial, distribution, and logistics activity, with a number of empty / under-utilized buildings along the frontage. South of Irving Park Rd. adjacent land use on the west side of the street shifts to residential. The downtown context begins south of Roosevelt Ave, continuing to Green St., where the truck route is diverted east; truck traffic is prohibited on the residential portion of the street south of Green St. Notable right-of-way features along York Rd. for the typical, industrial context include:

- Arterial character has a mix of features typical of urban and suburban context, with curb and gutter on west side of York Rd. and shoulder on east side.
- Eleven-foot lane width accommodates truck traffic; center turn lanes facilitate fast traffic speeds.
- Sidewalks are not continuous, particularly north of Thorndale Ave.
- Overhead utilities and billboards on east side of York Rd. along railroad add visual clutter.
- Frequent curb cuts along west side of York Rd.; no crossings to the east side of York due to adjacent rail right-of-way and airport beyond.
- Deep building setbacks and lack of adjacent development to the east give York an "open" character, with no enclosure.
- Narrow green buffer located east of York Rd. between roadway and railroad; tree canopy is inconsistent.



Existing Section and Plan: York Road

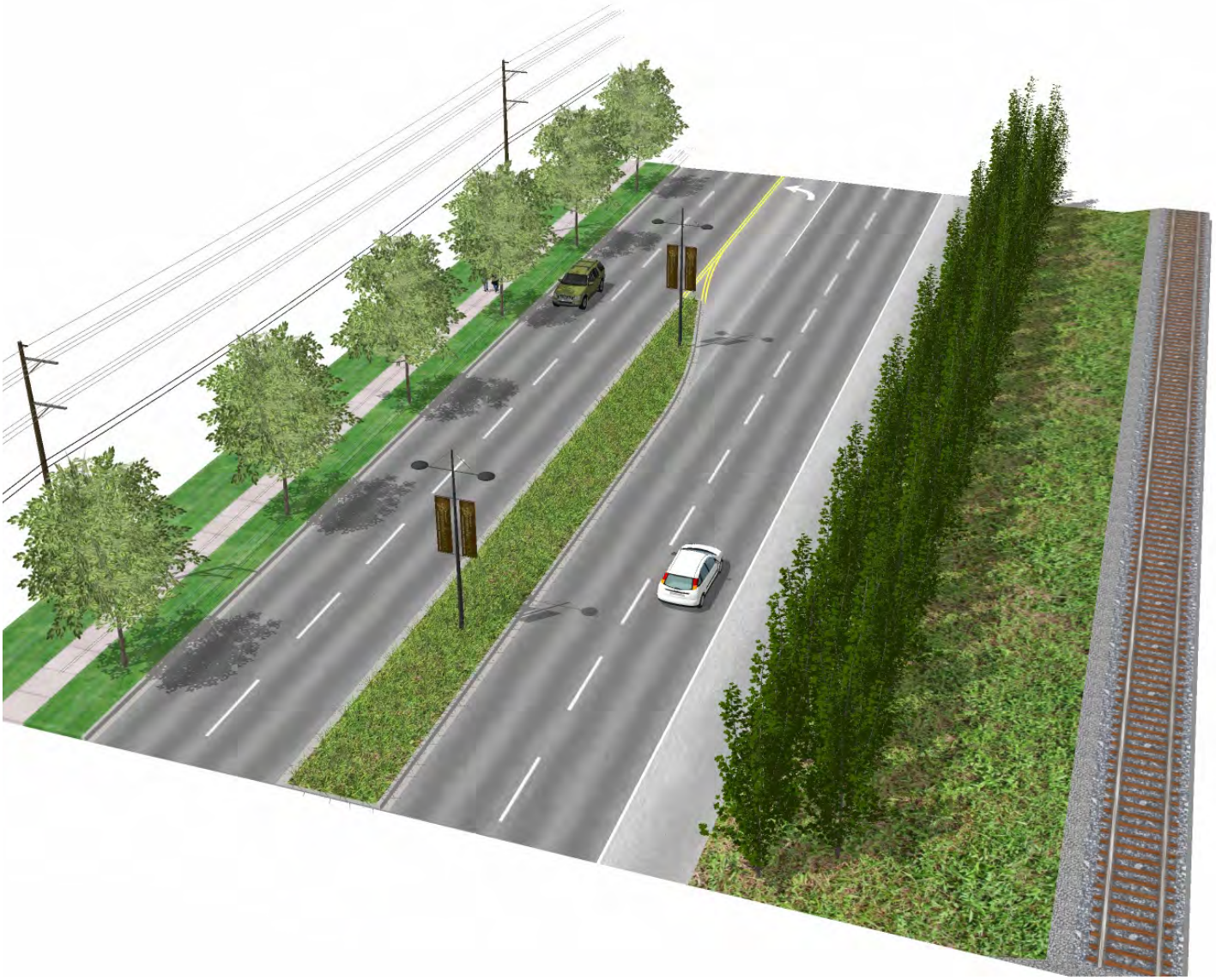
View north on York Road, north of Irving Park Road.

NORTHERN BUSINESS DISTRICT

York Rd. Streetscape Plan: Recommended Improvements

For the typical condition of York Rd. with an industrial context, the proposed streetscape incorporates a tall tree hedgerow to screen airport views and sound on the east side of York, as well as shade trees on the west side of the street, and a planted median. The tree hedgerow could be used for decorative lighting during special events and holidays. Installation of contemporary light fixtures and banners is also recommended to enhance the identity of the corridor. An alternate option is to install street lighting with banners within the planted median.

Streetscape improvements for the corridor could involve a broad range of commitments from the Village. The recommended improvements are identified by levels, or clear categories identifying specific upgrades for the public realm; refer to the Appendix for additional information.



Recommended Streetscape Elements

Level 1: Landscape Improvements

- Tall tree hedgerow to block airport views + sound on east side
- Street trees on west side installed at 30'-45' on center
- Planted median

Level 2: Street Lighting + Utility Improvements

- Create identity with consistent use of contemporary light fixture

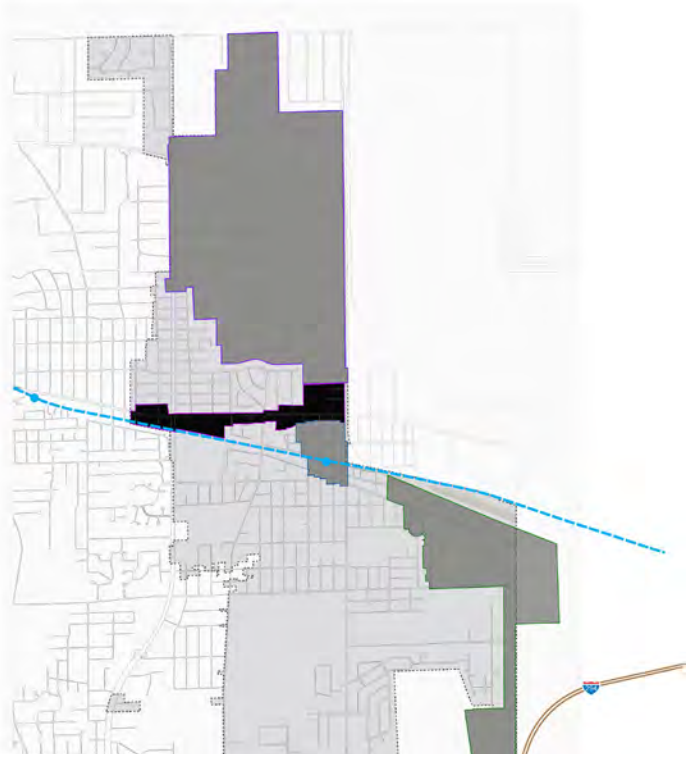
Level 3: Install banners to promote Village and identify local institutions

- Alternate Option: install street lights with banners in planted median where possible

Mid-Town –
Irving Park Corridor

MID-TOWN / IRVING PARK ROAD

Guiding Principles



- Connect with O'Hare International Airport and the interstate system, through the EOWA.
- Provide sites for mixed use infill redevelopment along Irving Park Road.
- Serve as the retail and commercial corridor for community.
- Enhance north - south connections across Irving Park to Downtown Bensenville.
- Review stormwater system needs to maximize development potential along the corridor.
- Monitor truck traffic along the corridor, particularly at Brookwood and IL Route 83.

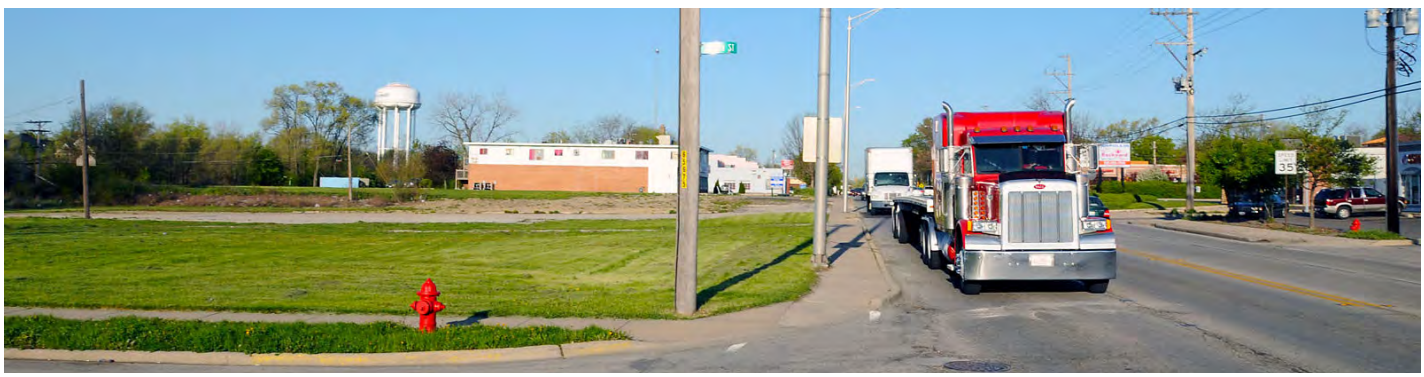
West Irving Park Focus Area *East Irving Park Focus Area*

MID-TOWN / IRVING PARK ROAD

Existing Conditions

AECOM completed an in-depth existing conditions along the Irving Park Corridor, from York Rd to IL Route 83. Factors noted include:

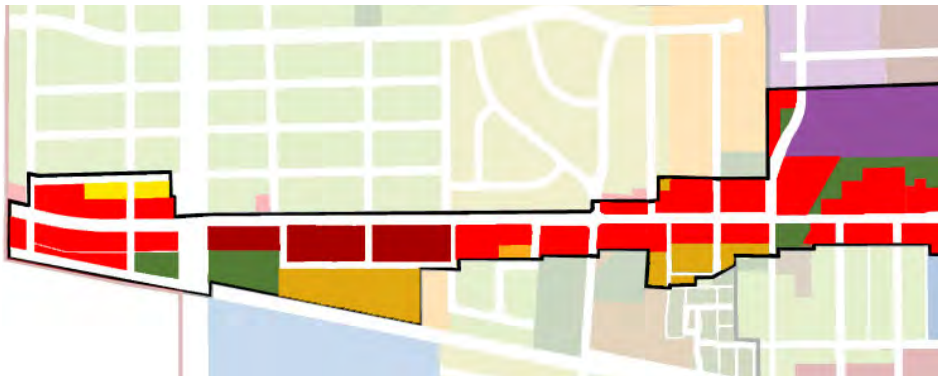
- Truck traffic on Irving Park Road is significant, from 1,900 trucks per day between IL Route 83 and York Rd. to more than 3,100 east of York Rd, and more then 3,875 west of IL Route 83. The route is classified as an “overweight truck route” by IDOT.
- In terms of total traffic volume, ADT for Irving Park increases from 27,500 west of York to 32,600 east of York. According to IDOT, Irving Park Rd. carries more traffic than York Rd.
- Land use is largely commercial in nature, with a general focus on convenience oriented retail; uses include gas stations, drug stores, stand-along commercial buildings, and smaller strip-retail centers. In general, development patterns reflect common themes seen around the Midwest; older strip and/or stand-along commercial buildings, with parcels that are shallow in depth.
- Silver Creek impacts several parcels on the southern side of Irving Park Rd. The creek is largely unimproved, and could be repositioned as a better open-space asset for the community
- The corridor includes several under-improved, and or vacant parcels, concentrated on the south side of Irving Park Rd., at Mason St.
- The connection between IL Route 83 and Irving Park Rd requires vehicles to traverse a residential area before connecting with IL Route 83 at Brookwood. IL Route 83 is a significant arterial, carring over 46,000 cars per day and about 7,200 trucks per day. This connection remains a challenge for the community.



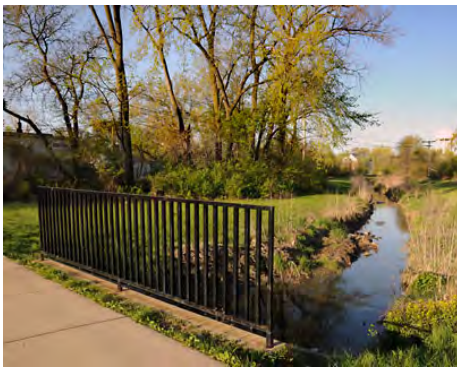
MID-TOWN / IRVING PARK ROAD

Zoning and Land Use

Existing Zoning



Proposed Land Use



MID-TOWN / IRVING PARK ROAD

Design Approach East of Church Street

Two design alternatives were developed for this portion of Irving Park Rd. The first alternative preserves the existing retail along Irving Park Rd. between Addison and York. A passive open space separates the existing retail from two new, state-of-the-art, large format buildings, used for retail / office / showroom activities. One that has an address on York Road and the other on an extended Mason St, which connects Irving Park Rd to the Northern Business District.

A grocery store with a cafe runs parallel with Silver Creek. The passive, public open space includes a water feature and a trail system. Mixed-use retail development lines the south side of Irving Park Rd, and townhomes flank a new open space system along Silver Creek.

The second alternative features two large format office/ showroom buildings and has a more traditional layout for a grocery store with parking in front, accessible immediately off of Irving Park Rd.

Development Program - Alt. I
Large Format Retail/
Office/Showroom.....222,000 sf
Retail.....78,500 sf
Residential.....105 units
Townhomes.....42 units
Multi-Family/Apartment.....63 units

Development Program - Alt. II
Large Format Retail/
Office/Showroom.....299,000 sf
Retail.....73,300 sf
Residential.....105 units
Townhomes.....42 units
Multi-Family/Apartment.....63 units

View looking west at intersection of York and Irving Park Roads

ILLUSTRATIVE PLAN - ALTERNATIVE I

1. Large Format Retail/Office/Showroom
2. Grocery Store
3. Retail
4. Townhomes
5. Multi-Family Apt Building
6. Office

ILLUSTRATIVE PLAN - ALTERNATIVE II

MID-TOWN / IRVING PARK ROAD

Design Approach West of Church Street

The plan for this portion of Irving Park Rd looks to strengthen the existing residential fabric on the north side of the street by introducing medium density residential development between Church St. and IL Route 83. Medium density residential development that includes townhomes and multi-family buildings frame a series of linear greenways and a passive open space that will support stormwater detention.

Stormwater detention is also incorporated into a passive open space behind the shown mixed use buildings. The noted stormwater solutions are supported by AECOM analysis of the watershed. Two alternatives are shown, reflecting opportunities to use underground stormwater detention to maximize the developable area of key sites.

Development Program

Residential.....454 units
Townhomes.....76 units
Stacked Flats.....58 units
Multi-Family/Apartment.....320 units
Retail.....8,500 sf

View looking east at intersection of Irving Park Roads and IL Route 83

ILLUSTRATIVE PLAN - ALTERNATIVE 1

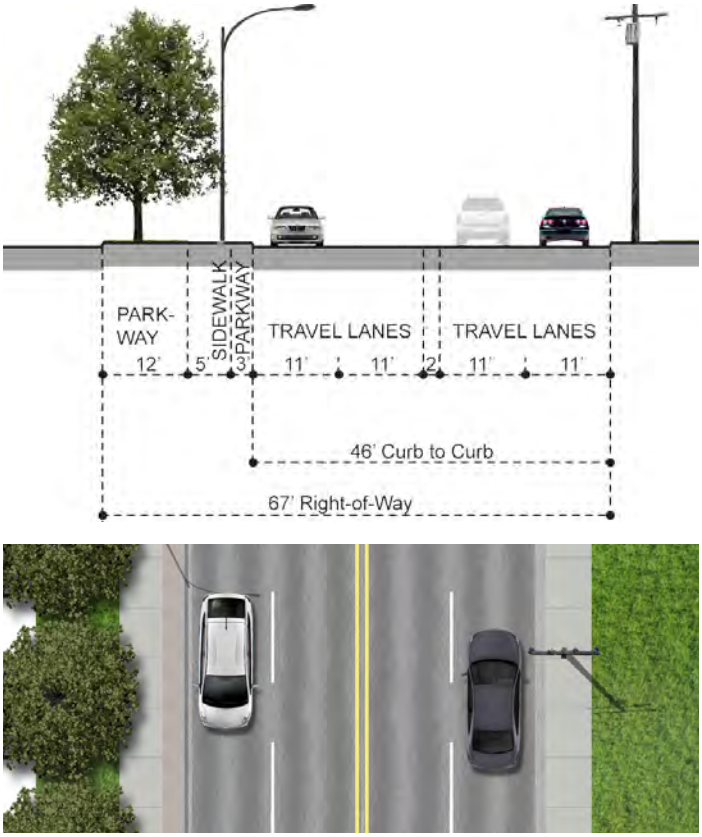
ILLUSTRATIVE PLAN - ALTERNATIVE 2

MID-TOWN / IRVING PARK ROAD

Streetscape Plan

Irving Park Rd. is an east-west arterial that typically reflects a commercial context, although the north side of the street between IL Route 83 and Church Rd. is lined with single family residential development. Notable right-of-way features include:

- Urban arterial character, with curb and gutter.
- Eleven-foot lane width accommodates truck traffic without encouraging fast traffic.
- Sidewalk and parkway on north side of street are located in utility easement rather than public right-of-way; overhead utilities are present along the corridor.
- Continuous sidewalks; in some areas, pedestrian zones are differentiated from utility zones, which are designated with pavers.
- Street grids to the north and south of Irving Park do not align, which limits traffic flow, particularly into downtown Bensenville. IDOT traffic counts on Center and Addison Streets south of Irving Park Rd. run in the 600 to 1000 car-per-day range.
- The block pattern is relatively urban with cross streets typically present every 500 to 800 feet.
- Residences between Church Road and Eastview Avenue back up along Irving Park; the right-of-way is lined with fences.
- West of Eastview, houses face Irving Park, and driveways are accessed from Irving Park.
- Frequent curb cuts at commercial area on east end of corridor .
- Stream corridor crosses Irving Park between Addison and Mason Streets.
- Some street trees are present in parkways; tree canopy is incomplete.



Existing Section and Plan: Irving Park Rd

View west toward Marshall Rd

IRVING PARK CORRIDOR

Streetscape Plan: Recommended Improvements

For the typical condition along Irving Park Rd. which reflects a commercial context, proposed streetscape improvements include installation of shade trees and a low shrub hedge to screen parking, as well as ornamental trees where undergrounding of utilities is not possible; contemporary light fixtures; utility improvements; banners; site furnishings; and specialty elements, including signage and wayfinding elements. The suggested design concept is contemporary in nature.

Streetscape improvements for the corridor could involve a broad range of commitments from the Village. The recommended improvements are identified by levels, or clear categories identifying specific upgrades for the public realm; refer to Appendix for additional information.

1. Light fixture/banner
2. Monuments
3. Low shrub hedge
4. Site furnishings
5. Signage

Recommended Streetscape Elements

Level 1: Landscape Improvements

- Install shade trees at 25'-35' on center, in tree grates
- Install shrub hedge to screen parking areas
- Where future undergrounding of utility lines is not possible, install small accent trees under utility lines

Level 2: Street Lighting + Utility Improvements

- Underground utility lines where possible
- Upgrade light poles

Level 3: Install banners to promote Village and retail street identity

Level 4: Select and install site furnishings

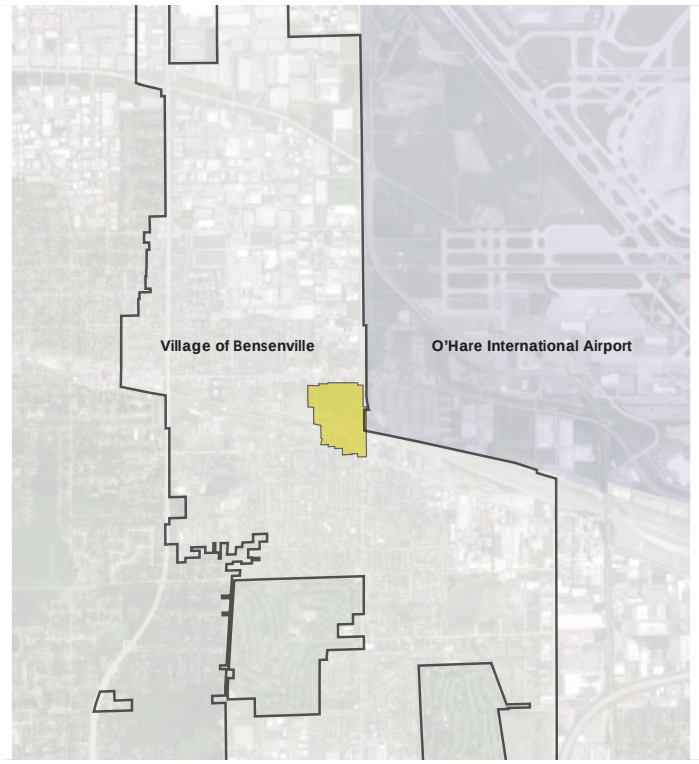
Level 5: Specialty Elements + Signage + Wayfinding (commercial context only)

- Enhance retail street identity with monuments at gateways, York and IL Route 83
- Create consistent building signage by developing signage design guidelines

Downtown

DOWNTOWN

Guiding Principles

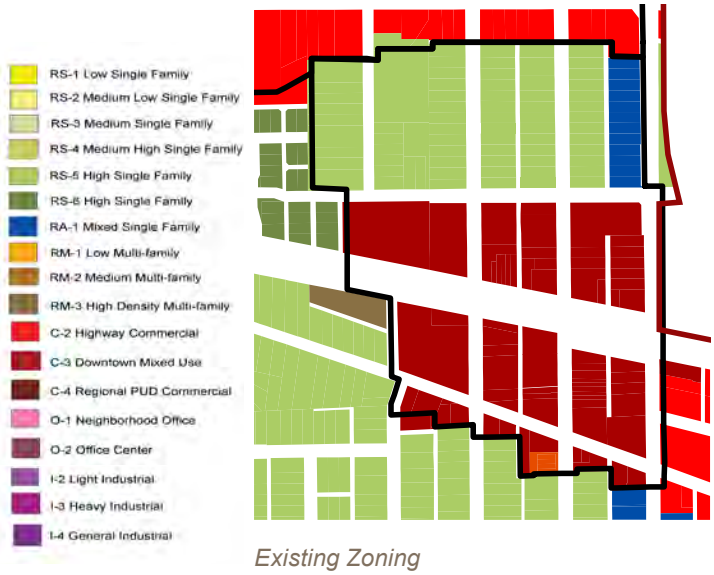


- Increase residential density and encourge mixed use.
- Encourage infill development, building from transit-oriented development linkages.
- Expand intermodal connectivity with METRA and PACE, and future Western Terminal.
- Improve north-south connectivity through downtown.
- Sustain downtown as a place to support community events.
- Benefit from improved regional access as a new EOWA interchange at York & Irving Park is completed.
- Improve signage and wayfinding to downtown.
- Develop retail recruitment strategy focused on core clusters, including restaurants, entertainment, and community services.
- Meet with property owners to understand their needs and long term plans.

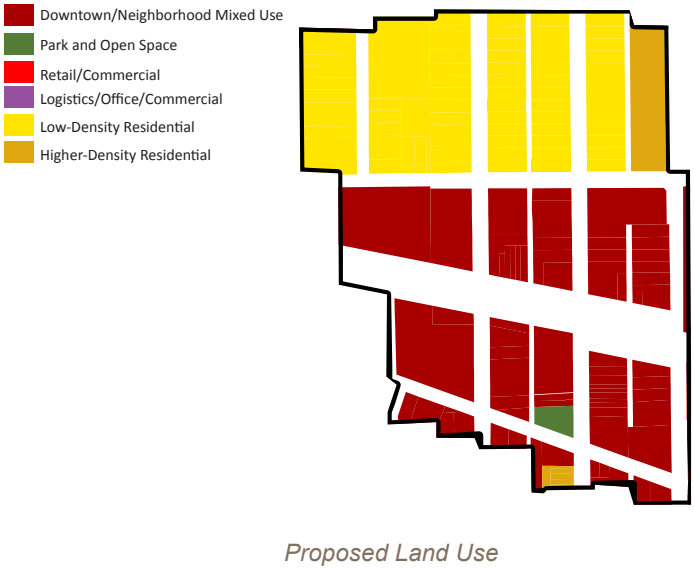
DOWNTOWN

Existing Conditions

- Retail mix includes a small number of restaurants, entertainment venues, and community services.
- There are a number of higher density residential towers, some with street level retail. Population within 1/2 mile is approximately 4,900 people.
- Several vacant sites are situated adjacent to the METRA station, and could be suitable for reuse.
- While corridors such as Irving Park and York carry considerable traffic, residential streets serving downtown carry very little traffic, less than 1000 cars per day on average.
- The rail line serving METRA and CP railroads through downtown carries an average of 86 trains per day (mostly passenger) according to US DOT records
- The Bensenville METRA station supports boardings of between 400 and 500 people per day, and supports about 200 parking spaces.
- The downtown area includes the intersection of York Rd and Green St. This intersection is currently improved with two gas stations and a telephone switching building.



Existing Zoning



Proposed Land Use

DOWNTOWN

Design Approach: Alternative 1

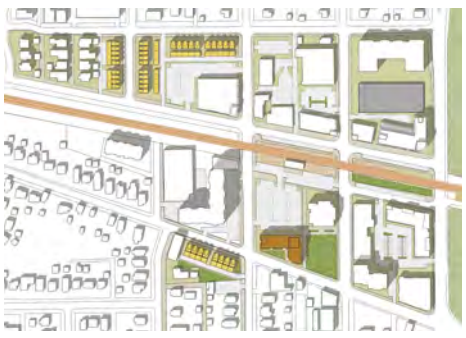
This alternative focuses on introducing new retail development and density around Towne Center Park in Downtown Bensenville and creating a strong retail edge along Main Street. Consideration should be given to the installation of an active water feature in the park to sustain summer activity in the downtown area.

Proposed streetscape improvements are also intended to strengthen downtown as a location for community events and outdoor festivals. Restaurants and supporting retail would be located at the ground floor of the residential building, framing the existing park and complementing existing retail along South Center Street.

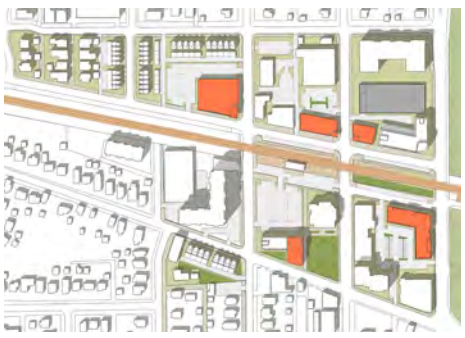
Development Program

Retail	57,600	SF
Residential	53	units
Townhomes	29	units
Total Housing	82	units

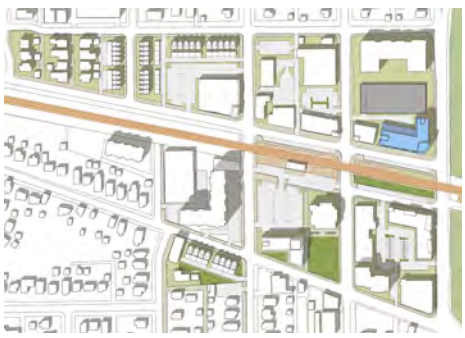
ILLUSTRATIVE PLAN - ALTERNATIVE 1



residential



retail/commercial



hotel

DOWNTOWN

Design Approach: Alternative 2

Higher density will transform Downtown Bensenville into a mixed-use, transit-oriented node, supported by enhanced PACE service. Retail uses along South Center St. are extended north across Main St., balancing the Village's "main street" on both sides of the Metra Station. Ground floor retail with residential units above are introduced north of Village Hall complements the existing retail on the east side of the street.

The park is preserved at Green and Center and framed by residential buildings and lined with restaurants, supporting retail and commercial development. A new parking structure supports proposed residential development along Green and Addison as well as staff and visitors to Village Hall.

Development Program

Retail	51,800	SF
Multi Family	239	units
Townhome	67	units
Total Housing	306	units

ILLUSTRATIVE PLAN - ALTERNATIVE 2

residential

retail/commercial

hotel

ILLUSTRATIVE PLAN - ALTERNATIVE 3

This alternative is focused largely on the intersection of Green Street and York Road. The program presumes eventual redevelopment of both existing gas stations as well as the existing phone switching station. Retail uses are not presumed for parcels on the intersection; rather a mix of residential or office is seen as more likely, taking advantage of the unique view corridors into O'Hare International Airport.

DOWNTOWN

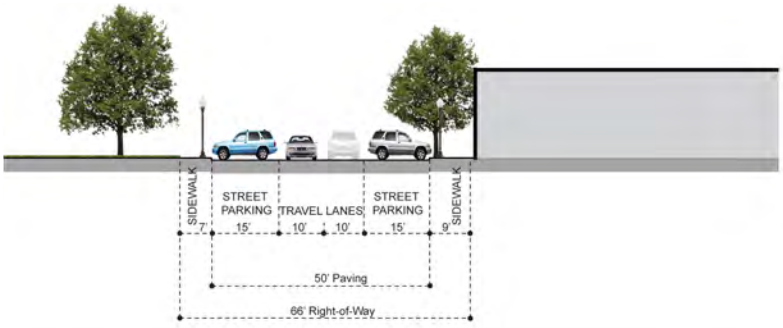
Streetscape Plan: Existing Conditions

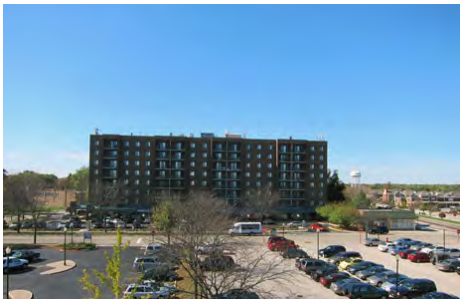
The downtown streets have traditional style pedestrian-scale lights, but they have inconsistent placement of street trees, planters, and pavers.

Center St., from Green to Main has been identified as the core downtown street due to the scale of the existing adjacent retail, Village Hall, and the potential for it to become a stronger event street.

Typical right-of-way features along downtown streets include:

- Urban, downtown street character includes curb and gutter.
- Wide paving accommodates perpendicular or diagonal parking in several locations.
- Lanes are wider than needed for the traffic volumes and speeds.
- Typical downtown character includes pedestrian-scale lights, street trees, planters, and pavers; in some areas, pedestrian zones are differentiated from utility zones, which are designated with pavers.





DOWNTOWN

Streetscape Plan: Recommended Improvements

The proposed streetscape narrows the street by eliminating angled parking on the east side of Center St and introducing parallel parking to allow a wider sidewalk.

The wider sidewalk allows for a more comfortable pedestrian environment as well as the installation of streetscape elements to enhance the public realm environment of Downtown Bensenville, including street trees, decorative lighting, signage for wayfinding, and street furniture to promote pedestrian activity.

Center St. would also feature a banded decorative paving pattern that extends across the roadway and integrates with the sidewalk paving.

Level 1: Install additional street trees as needed to create a consistent canopy.

Level 2: Street Light Improvements

- At all core and secondary downtown streets, create a downtown identity with the use of a contemporary pedestrian-scaled street light.
- Paving improvements at Center St to enhance pedestrian environment and create plaza feel across the street for events.

Level 3: Banners to promote downtown events and create identity

Level 4: Site Furnishings + Wayfinding

- Create a family of site furnishings to enhance the downtown identity
- Wayfinding elements at key locations

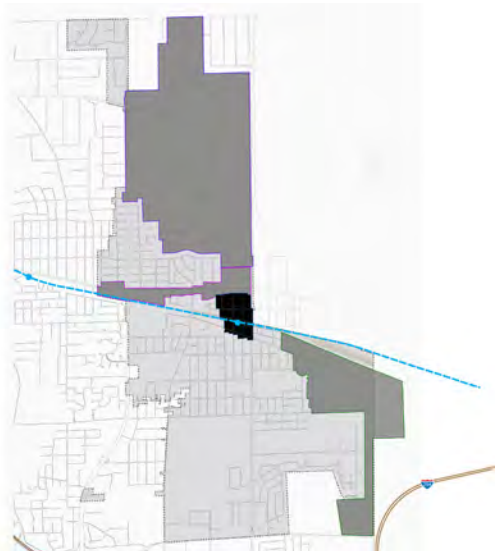
Level 5 (Center Street only): Specialty Elements

- Monuments at key intersections

Eastern Business District

EASTERN BUSINESS DISTRICT

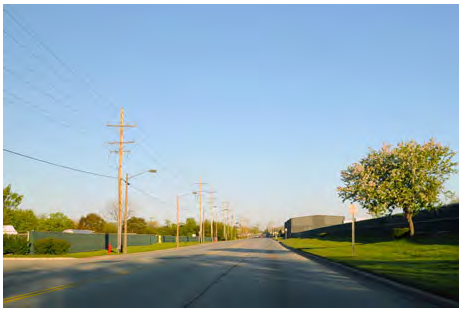
Guiding Principles

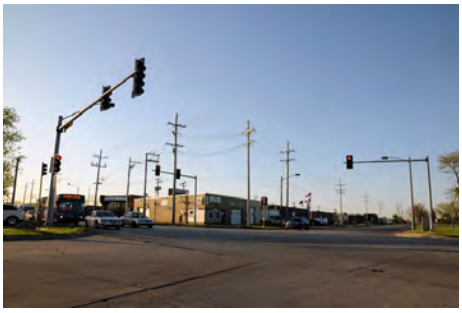


- Focus on opportunities that build from anticipated EOWA access at County Line Rd., as well as enhanced O'Hare International Airport cargo access.
- Position this district for higher value O'Hare International Airport-linked business services, logistics, and office-showroom opportunities.
- Evaluate opportunities for regional retail activity, linked with EOWA access at County Line Rd.
- Evaluate the Legends site for unique, larger-scale economic development opportunities, ideally linked with O'Hare International Airport activity.
- Continue to engage with the CP Railroad.





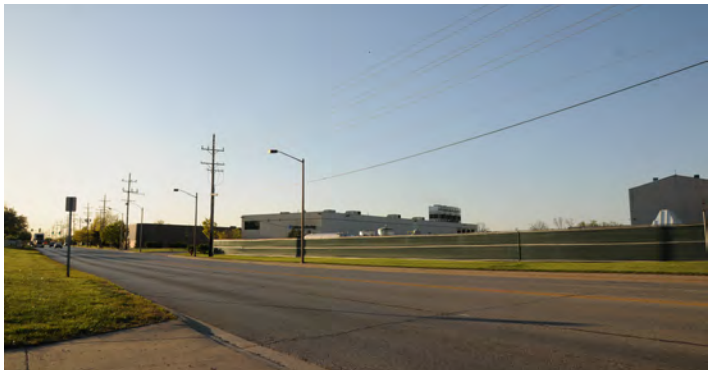


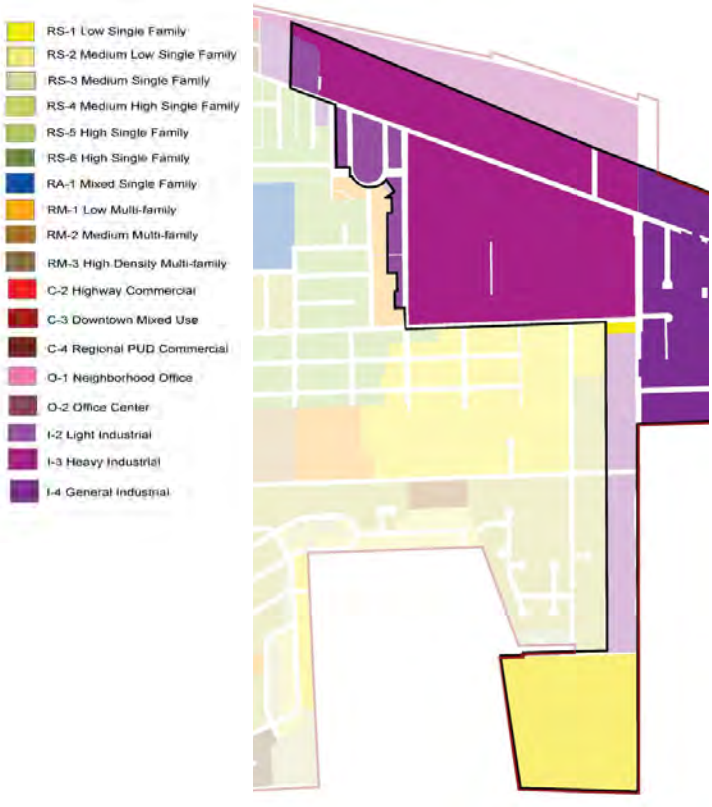



EASTERN BUSINESS DISTRICT

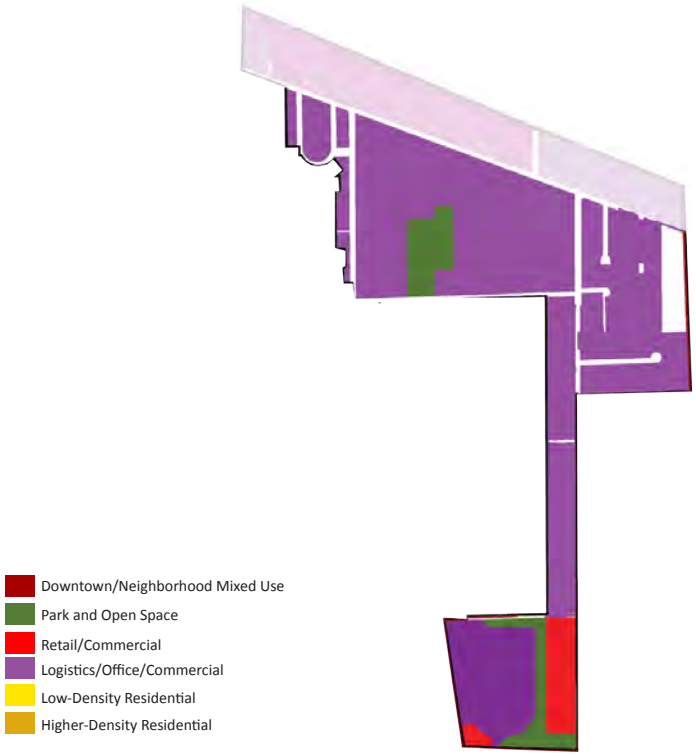
Existing Conditions

- Green St. carries more than 12,000 cars per day, and County Line Rd. carries between 7,400 and 10,200 cars per day.
- Land use is largely industrial in nature, with a number of vacant / under-utilized sites, some of which may have environmental challenges.
- Although Green St. connects with York Rd., its eastern connectivity with ignificant arterials such as IL Route 83 or Manheim is limited.
- EOWA right of way acquisition has impacted a number of buildings along the corridor.





Existing Zoning



Proposed Land Use

EASTERN BUSINESS DISTRICT

Design Approach I: Eastern Commercial

With high visibility from Green St. and the planned EOWA, parcels located at the southwest corner of County Line Rd. and Green St. could be positioned for larger scale, stand-alone regional retail development. Both alternatives call for more than 200,000 square feet of destination retail. Large format retail in the form of "showroom" retail in front and an assortment of supporting office, light industrial and storage in the rear of the facility could also be a major tenant of this part of the Eastern Business District. Business, office and light industrial facilities balance existing uses in the northern portion of the district.

The plan includes an alternative reflecting future potential redevelopment further west along Green Street as well, including the Legends site.

Development Program - Alt. I
Retail.....216,200 sf
Office.....45,000 sf
Residential.....327,000 sf

Development Program - Alt. II
Retail.....226,200 sf
Office.....45,000 sf
Residential.....347,000 sf

ILLUSTRATIVE PLAN - ALTERNATIVE I

1 Retail - Small format
2 Retail - Big Box
3 Retail - Small format
4 Retail - Medium format
5 Office
6 Large format retail/office Showroom
4 Business/Light Industrial

ILLUSTRATIVE PLAN - ALTERNATIVE II

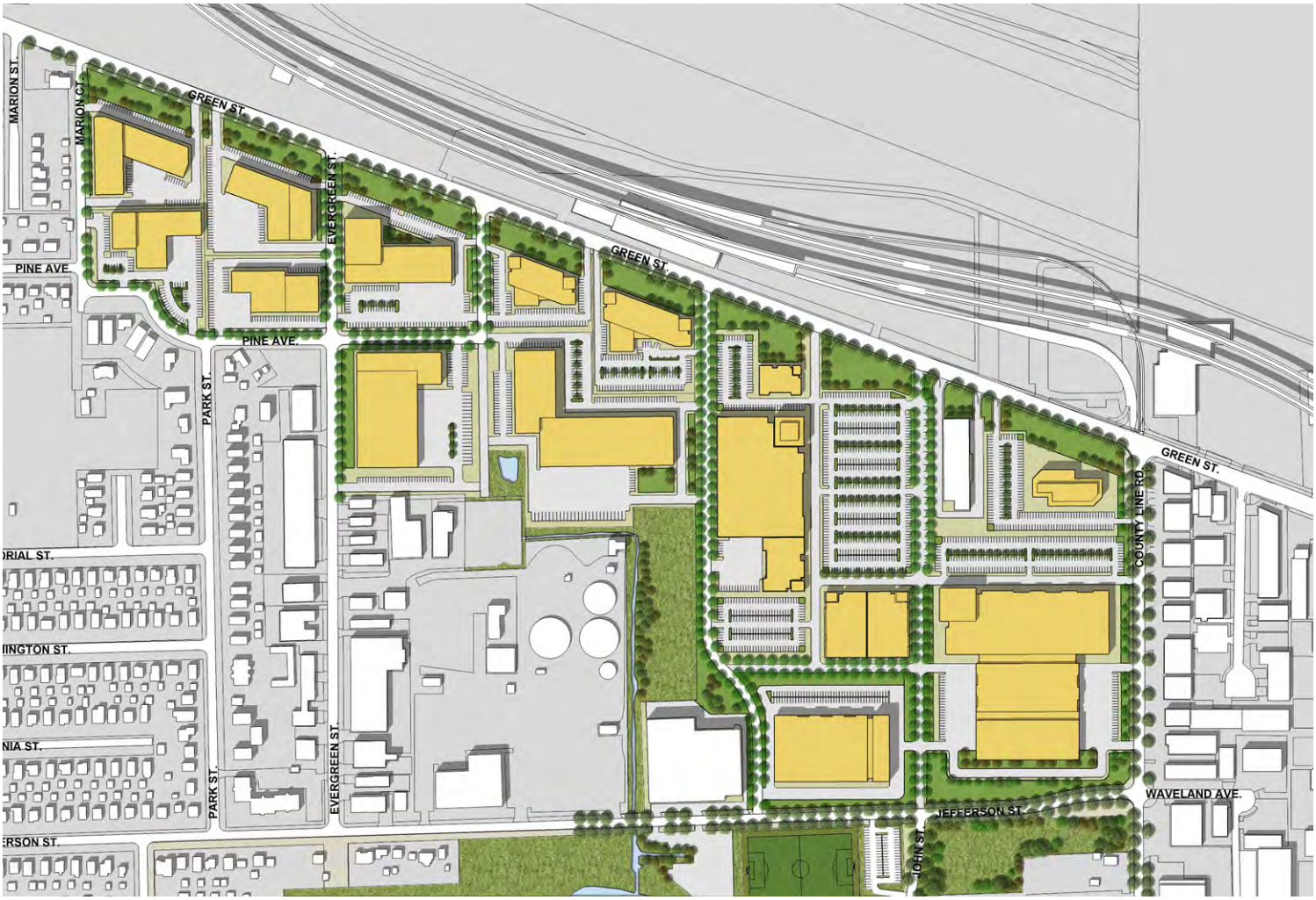
EASTERN BUSINESS DISTRICT

Design Approach I: Legends Site

Planning for the Legends Site, located in the NW quadrant of the intersection of Grand Ave and County Line Rd, presumes a mix of commercial activities, possibly including office, retail, and service functions along County Line Rd. The Illustrative plan also highlights the potential for a larger logicstics or flex-office / showroom development in the interior of the ste, which could support, E-commerce, order fulfillment, and general logistics. Given the likely setback from key streets, site security could be superior to other locations.

ILLUSTRATIVE PLAN

ILLUSTRATIVE PLAN - EAST GREEN STREET



The “East Green Street” Alternative presumes that with the eventual complation of the EOWA, that redevelopment along the broader length of Green Street is likely in the long-term, possibly more than 20 years in the future.

The alternative presumes a mix of service, office, or office showroom uses for frontage properties, as well as light industrial and distribution / logistics uses located behind. The alternative identifies the need for a more clear and consistent setback from the street as well. Residential is not viewed as a likely use.

Working toward this long-term vision for the corridor will require property assemblage. Given the immediate proximity of these properties to O’Hare, along with the general lack of other vacant land in the area, eventual market interest in these sites is likely.

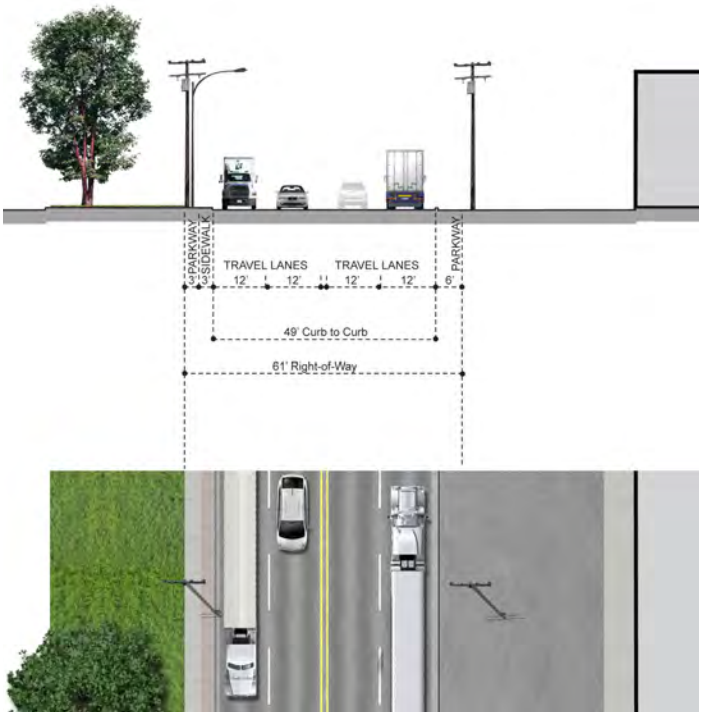
EASTERN BUSINESS DISTRICT

Green Street: Streetscape Plan - Existing Conditions

The character of East Green Street shifts from a downtown context east of York, to an industrial/residential context east to May Street, to a completely industrial context further east to County Line Road. The shift in character is described below, in the overview of the industrial context (the typical condition) and residential context. Green Street serves as a truck route, connecting from York Road to points south and east. Southbound truck traffic on York is routed east on Green Street.

Notable right-of-way features include:

- Urban arterial character, with curb and gutter.
- Wide travel lanes accommodate large vehicles and higher speeds.
- Poor pedestrian environment: lack of buffer between travel lanes and sidewalk, and parking lots are adjacent to right-of-way.
- Sidewalks are not continuous.
- Overhead utilities on both sides of Green Street add visual clutter.
- Frequent curb cuts, particularly on south side of street; no access to the north due to rail yard /tracks and airport beyond.
- Tree plantings are limited.



Existing Section/Plan: Green Street (Industrial Context / Typical Condition)

View west on Green St

EASTERN BUSINESS DISTRICT

Green Street: Streetscape Plan - Proposed Plan

For the typical condition along Green St., reflecting an industrial context, recommendations address landscape improvements, including installation of a tall tree hedgerow on the north side of the street to screen the railroad, airport, and future highway, as well as ornamental trees where undergrounding of utilities is not possible; street lighting and utility improvements; banners; and monuments and signage designating the entry to downtown and identifying major tenants along the corridor.

1. Light fixture / banner
2. Ornamental trees below power lines
3. Monuments / signage
4. Tree hedgerow along north side of street

Recommended Streetscape Elements

Level 1: Landscape Improvements

- Tall tree hedgerow to block views to railroad, airport, and future elevated highway on north side.
- Where future undergrounding of utility lines is not possible, install small accent trees under utility lines.

Level 2: Street Lighting + Utility Improvements

- Create identity with consistent use of contemporary light fixture.
- Bury power lines where possible.

Level 3: Install banners to designate entry to downtown and identify local institutions

Level 5: Install monuments to designate entry to downtown and identify local institutions

Aviation-Linked Planning Factors

Aviation-Linked Planning Factors

Aviation-Linked Planning Factors

INTRODUCTION

The operation of O'Hare International Airport, in its current and future configuration, affects the environs, both land and communities surrounding the airport. These environs are affected by the airport's noise exposure and the protection of multiple airspace surfaces needed for air navigation. Three factors affect the land use compatibility for Bensenville – airport noise, runway height restrictions and easements.

COMPATIBILITY AND NOISE

Noise is a large factor in assessing the environmental impact of airport operations on the existing land uses or future land uses adjacent to the airport. The negative impact of noise in general is the annoyance factor in interruption of communications (person-to-person speech and auditory listening), rest, relaxation and sleep as opposed to a health threat (loss of hearing and impacts on general health) due to the noise levels off-airport.

The noise impact associated with aircraft operations is typically determined by a weighted annualized noise exposure assessment. The FAA has provided guidelines for the development of noise exposure represented by areas as contours of equal exposure. The contours generated from the Integrated Noise Model represent the DNL (Day-Night Average Sound Level) which is an adjusted measurement that takes into account day and night time aspects of noise as well as the operations of the aircraft.

The Environmental Impact Statement (EIS) prepared for O'Hare International Airport Master Plan, included an assessment of the noise impacts associated with the proposed airfield development. As a benchmark reference, the 65dB DNL or lower represents a line of demarcation where residential uses, without any sound mitigation measures, are considered compatible land uses.

On the noise reception side, the land use determines the time of day that persons will be exposed to the noise as a business may operate only during the day whereas a residence may be occupied day and night with sleep disruption being a added factor. Consequently the FAA guidelines recommend various levels of noise mitigation measures for certain areas of building occupation depending on their primary use.

With regards to land use compatibility and impacts within Bensenville from a future airport layout plan, the following are some physical planning notes based on projected airport operations and runway locations.

Based on the noise contours indicated in the EIS and the percentages of traffic cited, two of the runways of the future airport are estimated to have the most implications for Bensenville: 9R-27L and 10L-28R. These two runways represent the most heavily used runways in the projected estimate of operations for the future airport layout plan with respect to Bensenville due to the runway ends being close to the eastern boundary of Bensenville.

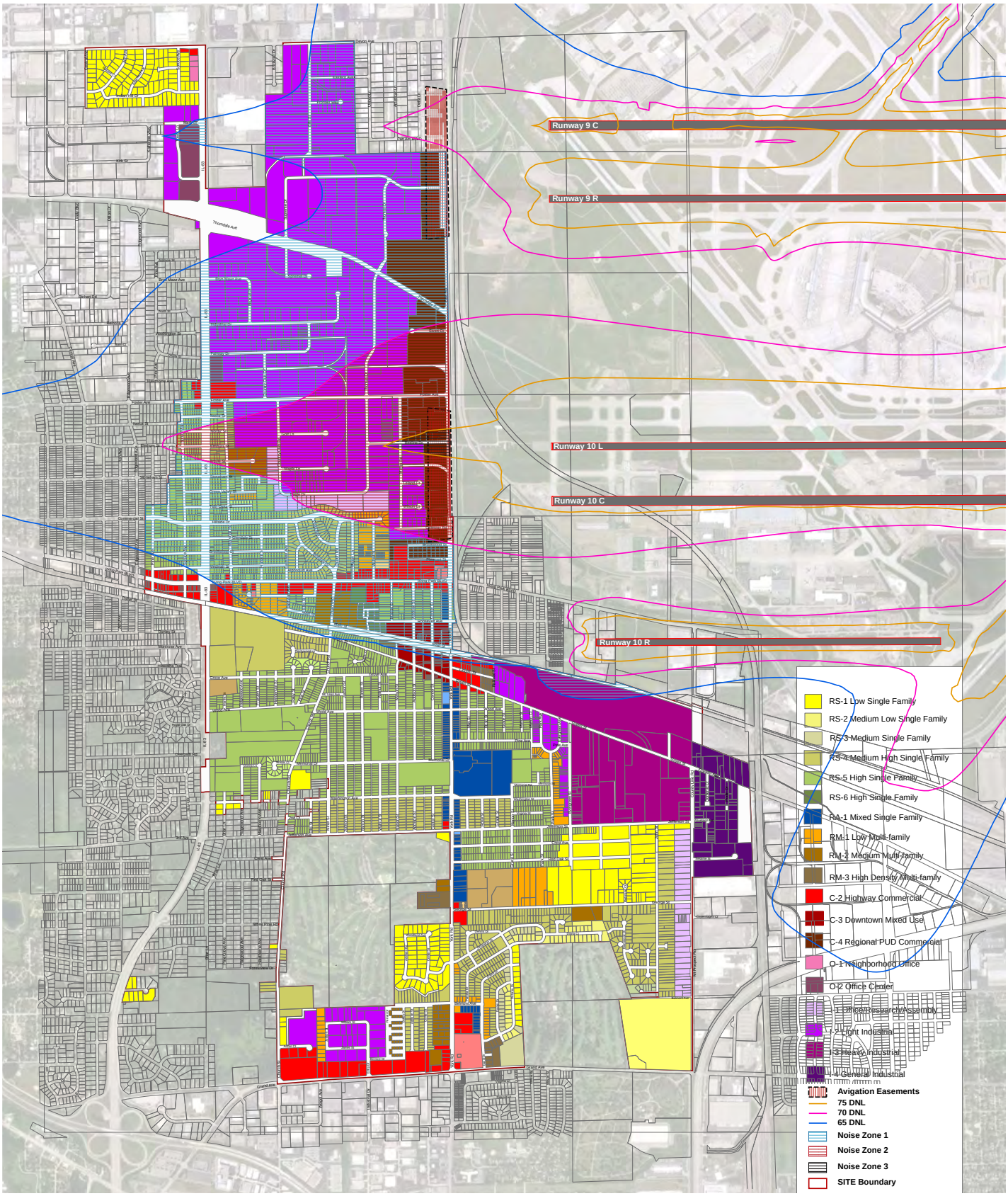
These runways are coupled with some closely located paired runways (9C-27C and 10C-28C respectively) and this combination also contributes to the importance of these two runways for impacts on Bensenville. (Refer to Exhibit 1.)

There are three contour lines represented in the EIS that overlay Bensenville – 65dB DNL, 70dB DNL, and 75dB DNL which are produced by the aircraft operations on the runways cited above. The contours represent general estimated limits of the noise levels but as noted actual noise levels will vary depending of the aircraft operations at any one time, the time of day or night, the type of aircraft and whether it is a departure or arrival.

Using the noise contours from the EIS, (Exhibit 5.1-10, Noise Contours, Build Out, Alternate C) most of Bensenville north of the future realigned Irving Park Rd. and CP rail line is within the 65dB DNL and above contour range. Below the 65dB DNL contour there are no land use compatibility issues per FAA guidelines. Land uses within the 65dB DNL contour should include non-sensitive land uses in terms of compatibility. (Refer to Exhibit 3.)

As noted, the model for noise contours is capable of responding to updates in data input and anticipated changes in the modeling. The typical factors that would inform current modeling and affect future noise modeling would be changes in aviation forecasts, flight frequency, runway usage, taxiing patterns, aircraft type, etc.

EXHIBIT 1: ZONING AND NOISE CONTOURS OVERLAY



The land use designations used by the FAA, which cross reference with the indicated DNL contours, are Residential, Public Use, Commercial Use, Manufacturing and Production and Recreational. All these land uses are compatible with a DNL noise level below 65dB DNL.

From 65dB DNL to 70dB DNL contour range, Residential land uses and some Public Use land uses are compatible but with recommended sound insulation for noise level reduction, but Commercial Use and Manufacturing and Production are designated as compatible.

From 70dB DNL to 75dB DNL contour range, Residential land uses and Public Use land uses are compatible with the guidelines but with recommended sound insulation for noise level reduction with certain uses having an increased sound insulation than the 65dB to 70dB DNL contour range. Commercial Uses and the portions of Manufacturing and Production buildings where the public is received, offices and noise sensitive areas are also recommended for sound insulation measures for noise level reduction.

From 75dB DNL to 80dB DNL contour range, Residential land uses are not compatible except transient lodgings with recommended noise mitigation measures. Some Public Use land uses are not compatible and others are compatible with the FAA guidelines but with recommended sound insulation for noise level reduction at a higher level than the lower noise contours of 70 DNL to 75dB DNL.

Commercial Uses and the portions of Manufacturing and Production buildings where the public is received, offices and noise sensitive areas are compatible but with a recommended with higher level of sound insulation measures for noise level reduction at a higher level than the lower noise contour of 70 DNL to 75dB DNL.

This analysis is based on the assessment performed and presented as part of the EIS,and the FAA framework for determining the compatibility of land uses with respect to aircraft noise exposure, and the current land uses and underlying zoning.

The majority of the area of Bensenville impacted by the 65dB to 70dB contour range is designated Industrial or Regional PUD Commercial by the Village of Bensenville Zoning District map and is consequently compatible in principle with projected noise levels.

The remaining areas of Residential areas within this 65dB DNL to 70dB DNL contour range are considered compatible but with the implementation of sound insulation and noise mitigation measures. Noise mitigation measures that would make uses compatible would positively affect the real estate values and marketability of these residential properties.

For the current owners and tenants of the impacted industrial properties, there may be uses due to their own level of noise production or limited sensitivity to noise that are not impacted by the projected new noise contours. There may be however uses or tenants who might benefit from relocating within Bensenville to another property where the level of noise does not conflict with their business operations.

Certain land uses require special attention. For example, for the development of a hotel (Transient Lodging), the projection of night time arrivals or departures from a runway would be a major consideration in the placement of the hotel and building orientation.

LAND USE COMPATIBILITY AND RUNWAY HEIGHT RESTRICTIONS

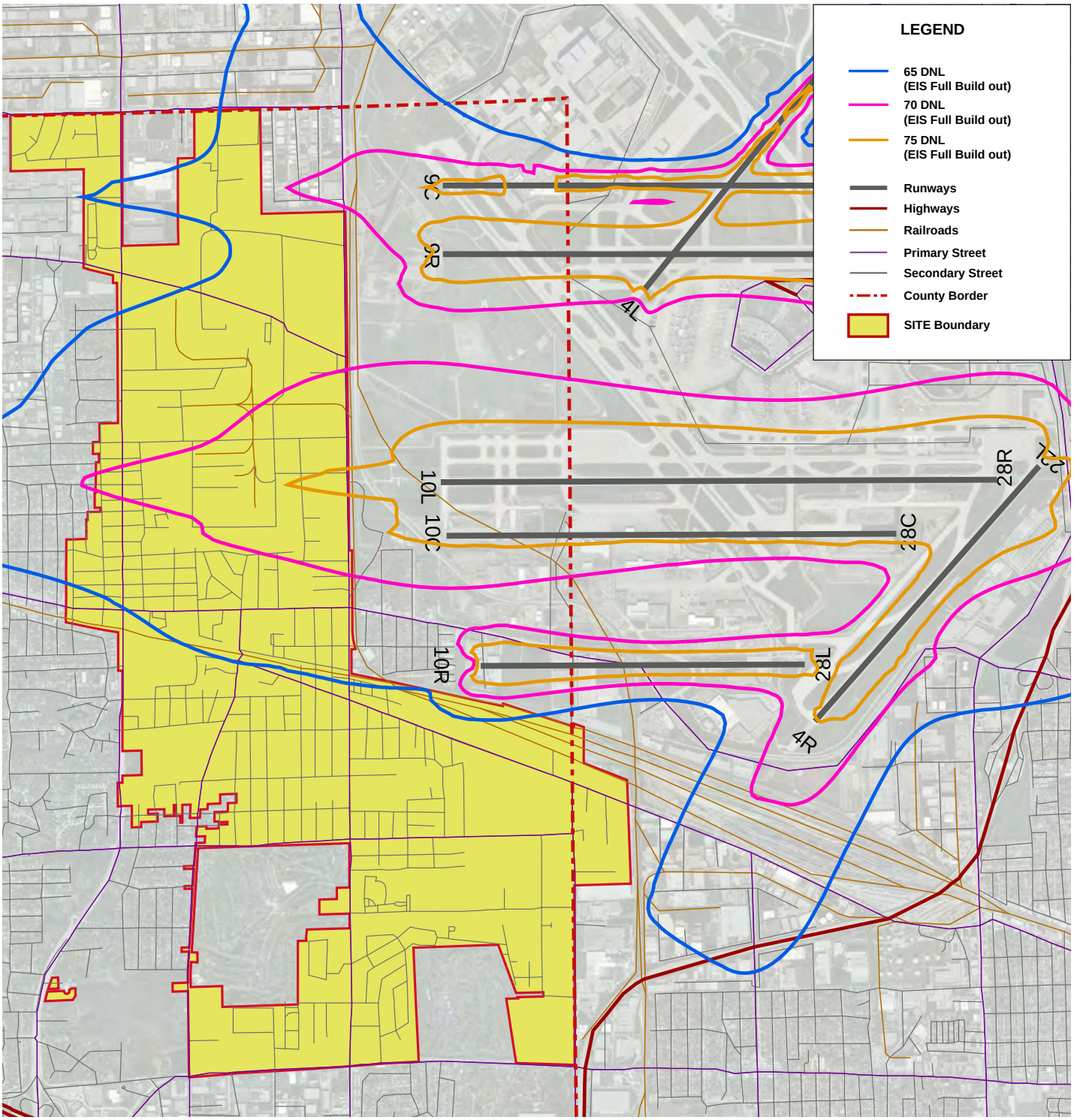
The Code of Federal Regulations (CFR) Federal Air Regulations (FAR) under Part 77, Objects Affecting Navigable Airspace defines a series of surfaces needed to protect the airspace in and around an airport. These are defined by the airport master plan based on the airport elevation and the runway end elevations and affect the height of structures and vegetation under the runways of O'Hare (proposed and existing). A composite drawing of these surfaces is typically prepared as part of an Airport Master Plan process. O'Hare International Airport included this composite drawing as part of the Airport Layout Plan set which was approved by the FAA in 2005. (Refer to Exhibit 4.)

The airspace surfaces within the Village of Bensenville include the Approach Surfaces for Runways 9C, 9R, 10L, 10C and 10R. In between these surfaces, other surfaces such as transitional (7:1) and the Horizontal surface also govern the airspace within the Village.

The FAA relies on a process whereby all violations of these surfaces are documented. Maps containing this information (Obstruction Charts) are published where the disposition of each of the surface penetrations are listed. In general, the Airport is required to mitigate any penetrations to these surfaces.

Of the six proposed east-west oriented runways, the northernmost runway (9L-27R) and its flight path does not contact the boundaries of Bensenville. The Runways 9C, 9R, 10L, 10C and 10R (the western ends of the runways) all set height restrictions with regard to runway approach navigation over Bensenville.

EXHIBIT 2: NOISE CONTOURS



When the new or extended runways are complete, these approach surfaces will exist with Runway 9C and 9R combining into a single area of height restriction and Runway 10L and 10C combining into a single area of height restriction. (Refer to Exhibit 4.)

Using the Future Runway Approach Surface drawings of the Airport Layout Plan for O'Hare International Airport (2003), a table on the following page indicates some estimated spot height restrictions (for demonstration purposes only) at the centerline of the runways.

From the cited elevation height restriction at the west edge of York Rd., the allowable height increases one foot vertical for each fifty foot increase to the west along a dimension of 10,000 feet to the west and then continues out per the FAA Part 77 regulations. Perpendicular to the runway, the sides of the trapezoidal Inner Approach Surface height restrictions lessen as one moves away from the centerline of the runway in a 7:1 ratio.

Consequently if a north-south section is cut along the west edge of York Road there are three "flat" areas of height restrictions under Runway 9C and 9R combined, Runway 10L and 10C combined and Runway 10R. These flat areas increase in height at ratio of 50:1 so every 50 feet west of the west edge of York Rd. the height restriction is one foot higher. Consequently the rise in restriction from York Road to IL Route 83 / Busse Rd. is approximately 100 feet higher, and the flat areas of height restriction are wider correspondingly as the trapezoid base become larger the farther from the runway end.

Perpendicular to the runway and starting at the edge of the trapezoid of the Inner Approach Surface, the allowable height increases at a 7:1 ratio. Which means that these increase in height more rapidly between the center lines of runways increasing allowable heights between the runway approach surfaces. Consequently there is an area of increased height between the Runway 9C and 9R (combined) and Runway 10L and 10C (combined). Similarly there is an area of increased height between Runway 10L and 10C (combined) and Runway 10R.

The first noted high point would be approximately located at the intersection to Thorndale (also the proposed expressway right of way) and York Road. The second noted high point would be approximately located at the intersection of Irving Park Rd. and York Rd. These high points are also regulated by a 150 foot horizontal surface above established airport elevation between the runways. For the purposes of this analysis, the elevation of 668.3' MSL – Future per the Airport Layout Plan is used. Consequently an increased height (regulated by Village of Bensenville zoning height restrictions and the 150 foot horizontal surface) could coincide with a denser and higher development at these road transportation nodes.

The current Village of Bensenville zoning for this length of York Road is C-4 Regional PUD Commercial at the west edge of York Road and west of that the zoning is I-2 Light Industrial. Per the zoning regulations, the building height restriction for the C-4 Regional PUD Commercial is no requirement except where FAA Rule Part 77 and any other related FAA height restrictions mandate a reduced height and 40 feet within 200 feet of a Residential district, and the building height for the I-2 Light Industrial is no requirement except where FAA Rule Part 77 and any other related FAA height restrictions mandate a reduced height and 32 feet within 200 feet of a Residential district.

EXHIBIT 3: SURFACES

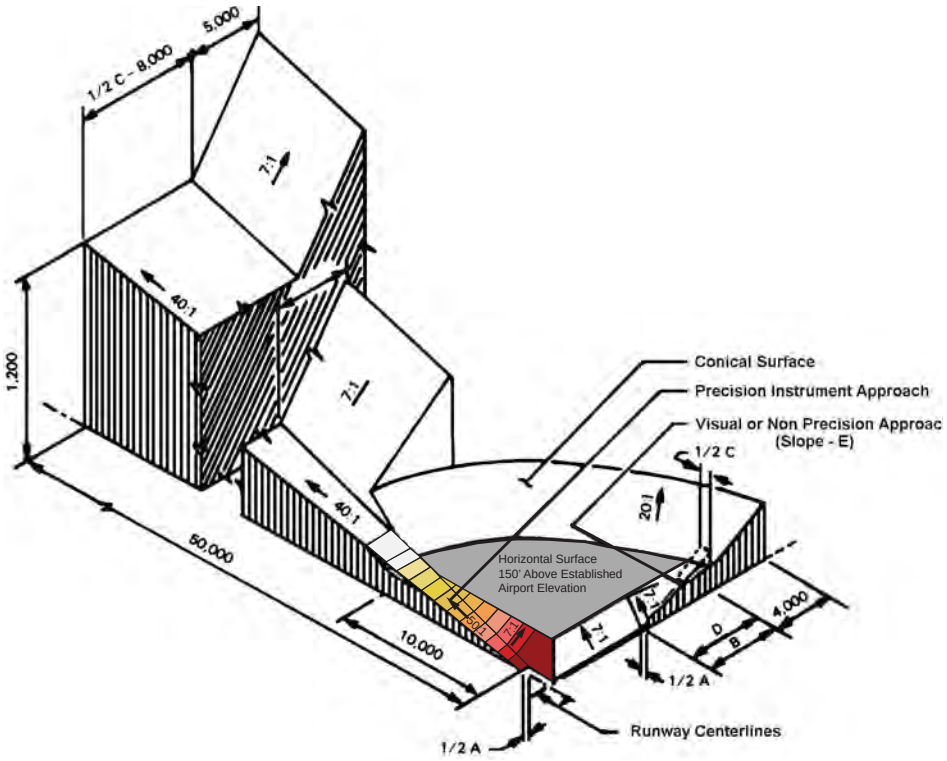
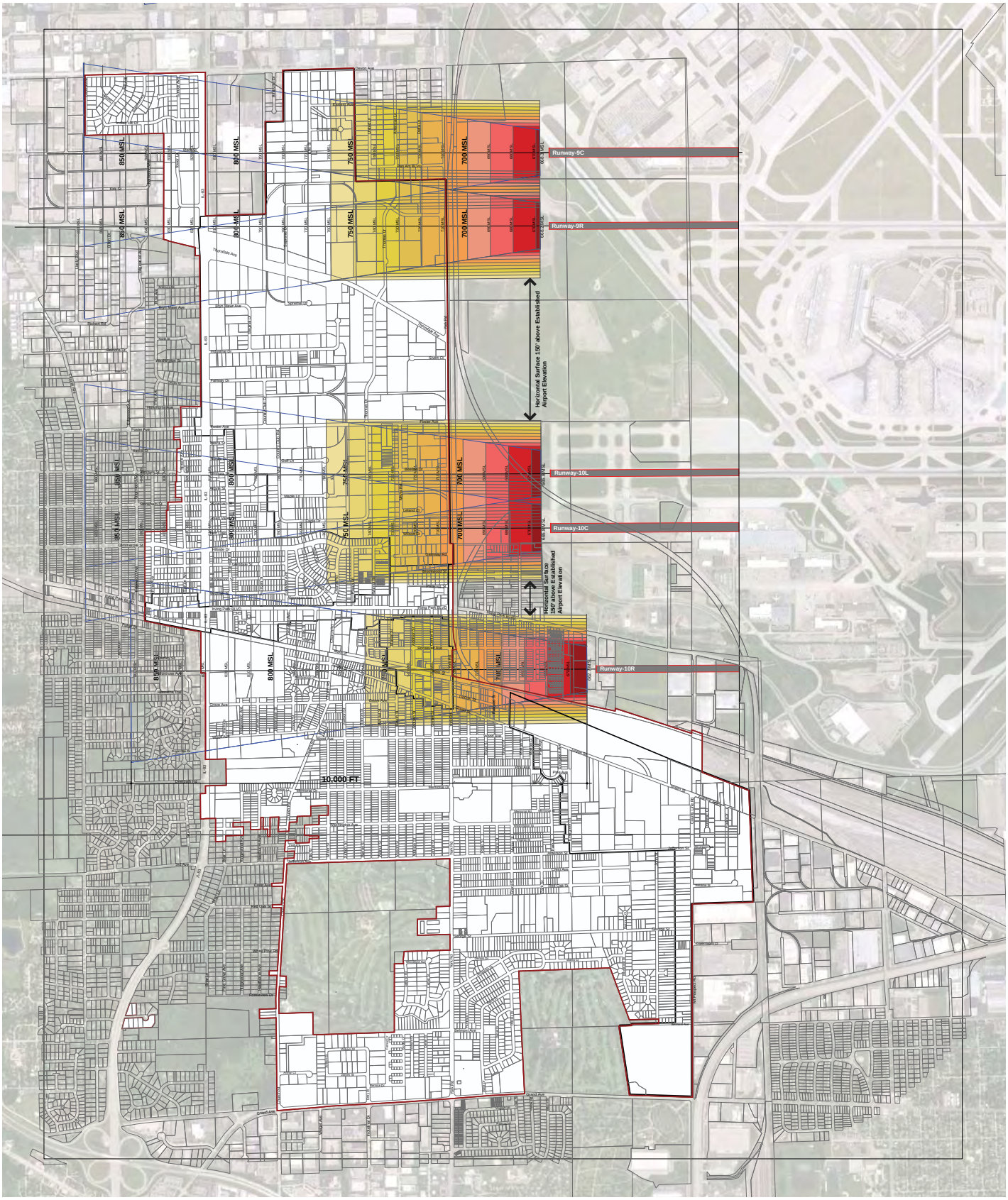


EXHIBIT 4: HEIGHT CONTOURS



LAND USE COMPATIBILITY AND AVIATION EASEMENTS

There are two areas designated as aviation easements on the future Airport Layout Plan drawing for O'Hare International Airport, one at the end of Runway 9C and 9R (combined Runway Protection Zone boundary) and one at the end of Runway 10L and 10C (combined Runway Protection Zone boundary). These easements follow the Runway Protection Zones (RPZs) for the noted runways.

In an optimum situation, the RPZs would be clear of all objects. Uses are restricted such as those that would attract wildlife or would interfere with navigational aids. Automobile parking facilities, for example are permitted but discouraged. Land uses prohibited are residences, and places of public assembly (including churches, schools, hospitals, office, shopping centers and other uses with similar concentrations of persons).

Where it is determined to be impracticable for the airport owner to acquire and plan the land uses within the entire RPZ, the FAA's RPZ land use standards have recommendation status for that portion of RPZ not controlled by the airport owner. (Refer to Exhibit 5.) which highlights two areas on the western edge of O'Hare, west of York Road that could be influenced by RPZ standards.

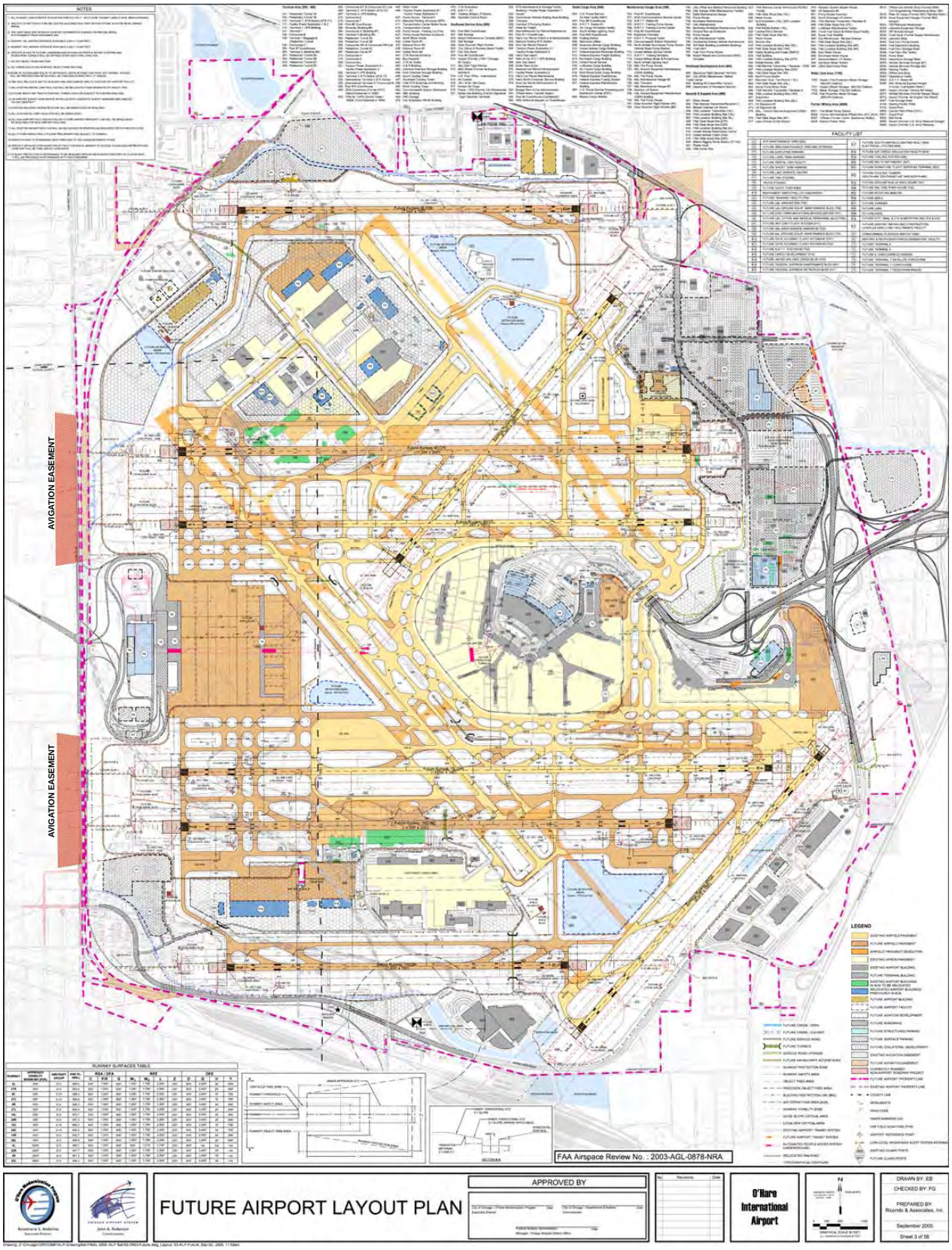
Currently, we understand that O'Hare International Airport is not pursuing aviation easements, and the existing land uses and structures within the identified aviation easements are to remain except for any obstacles that have been identified in the FAA Part 77 Inner Approach Surface runway analysis from the future Airport Layout Plan.

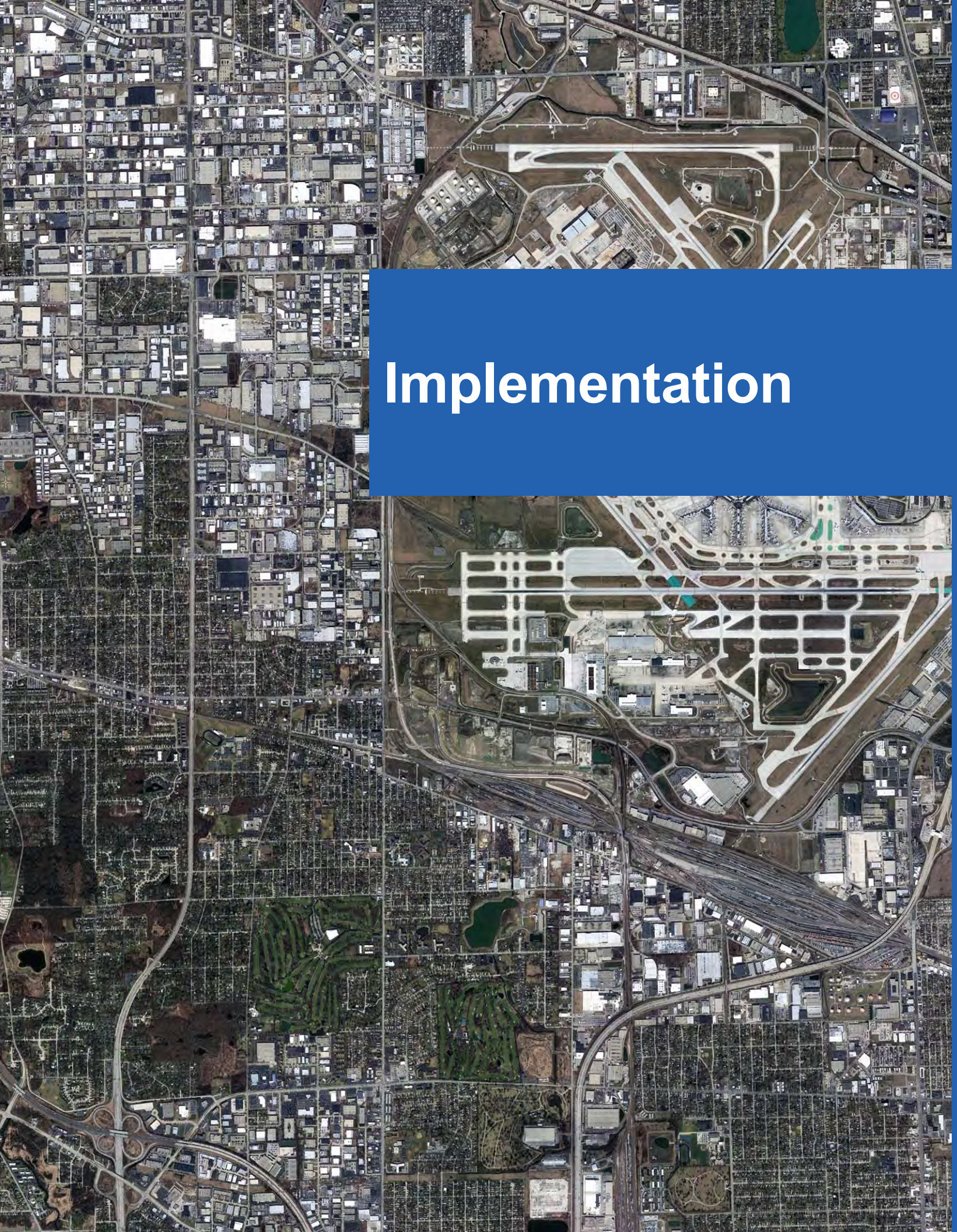
Consequently, the land uses currently existing are allowed to remain and future land uses are to be the same as the existing. Any construction or modification under the Inner Approach Surfaces and other FAA regulated Surfaces of the runways or within the boundaries of the RPZ zones fall under jurisdiction of the Village of Bensenville for zoning restrictions and under FAA review based on the conditions cited under FAA review process using FAA Form 7460-1, Notice of Proposed Construction or Alteration.

Runway (centerline as reference point)	Inner Approach Surface Height at West Edge of York Road (approximate)	York Road Curb Height (approximate)	Estimated Building Height Restriction	Aviation Easement Delineation (see section below)
9C-27C	+709 MSL	+660 MSL	+51	Yes
9R-27L	+709 MSL	+660 MSL	+51	Yes
10L-28R	+705 MSL	+663 MSL	+42	Yes
10C-28C	+705 MSL	+668 MSL	+38	Yes
10R-28L	+723 MSL	+672 MSL	+51	No

Note: Values indicated are comparative and estimated and for demonstration purposes only. Height restriction information and the background thereof are contained in the O'Hare International Airport Layout Plan. Actual review process is initiated through the FAA Form (s) 7460 based on the Advisory Circular AC 70/7460-1K. Bensenville Zoning regulations beyond their own zoning height restrictions cite the FAA rule Part 77 and other related FAA height restriction for mandates for a reduced height. http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgAdvisoryCircular.nsf/0/b993dcdfc37fcdc486257251005c4e21

EXHIBIT 5: FUTURE AIRPORT LAYOUT PLAN





Implementation

Implementation

INTRODUCTION

Since the OMP began, Bensenville has only been able to react as mandated changes were implemented. Now, in part through this effort, the Village can begin to make deliberate choices that will begin to influence the community's recovery and growth over the next 20 years. Opportunities begin with recent announcements by the Tollway and Chicago Department of Aviation which provide a reasonably clear sense of the anticipated time frames for OMP and EOWA construction, projects which have the potential to drive $3 to $6 billion in new construction investment along the Village's northeastern border. At full build out the OMP is expected to include:

- A new southern runway, 10R/28L. While the proposed runway flight path would generally align with downtown, master plan guidance indicates that this generally shorter runway will be used on a limited basis.
- The UP grade separation over Irving Park Rd. is complete. The CP grade separation is expected to break ground in 2013, with completion by 2015. In this time frame, Irving Park Rd. will also be realigned, resulting in a new western gateway and access into O'Hare International Airport
- Plans are underway to consolidate the rental car area on the northeast side of O'Hare International Airport. Given the distance from the new rental car location, it is anticipated that additional car rental capacity would be needed in the proposed Western Terminal.
- The terminal leases for United and American reportedly come due for renegotiation in 2018. It is reasonable to assume that discussions regarding a new terminal will begin to be influenced by these conversations.

While we believe that opportunities associated with the OMP and EOWA will ultimately be transformative for the Village, it will take several years to get there, so expectations need to be tempered. As well, the Village of Bensenville is slowly recovering from the Great Recession, so it is hard to ignore the reality of limited resources.

Broader risks and uncertainty should also be apparent:

- For the next two years, there will be limited federal, and state resources to fund projects. Constrained funding is a practical concern, as it will dictate the future structure of public transit connections which are proposed for the Thorndale Corridor. Land use plans need to consider mid- to long-term opportunities that link with right-of-way that has been preserved in current plans.
- With the American Airlines bankruptcy and merger with USAir in mind, there is the reality of uncertainty regarding the airlines' collective ability to financially sustain the goal of a new western terminal, even as plans for South Suburban Airport continue to evolve.

While the Western Terminal remains the most obvious OMP project that is desired locally, our experience suggests that other OMP and EOWA improvements linked with expanding international air cargo and exports will be as significant for the community economically in the future.

ECONOMIC DEVELOPMENT PRIORITIES

Framework

Our national experience highlights the practical challenges of encouraging infill redevelopment along older corridors, such as Irving Park Rd. or Green St. Even before the recession, challenges have been driven by the increasing difficulty of getting financing for projects, perceptions of increased risk, as well as delays created by extended entitlement and development review policies, the latter of which are a key reason why infill projects are seen as more "risky". Reflective of the real challenges of effecting change in these areas, successful policy responses have focused on:

- Building public consensus and involvement up front
- Identifying important sites and securing preliminary entitlements for their redevelopment
- Improve the appeal of infill sites with targeted infrastructure and access improvements
- Marketing infill sites aggressively

The underlying theme in these four points is the potential need for a more aggressive public sector role in redevelopment, with the end goal of reducing the front end time required to effect infill site redevelopment. Many cities view efforts to streamline pre development planning and entitlement processes as a specific development incentive, because they reduce the developer's carrying costs and interest expenses.

For the Village to fully benefit in the long-term from OMP and EOWA-linked investment, our experience suggests that the following will also be needed:

- Expanded resources and organizational capacity at the Village level, including economic development capacity.
- Deeper partnerships with local public, private, and institutional entities.
- Expanded marketing, to shift and redefine perceptions about the community.

Priority - Organization and Resources

Recommendations build from the premise that organizational capacity, resources, and strategy are critical in supporting future success. Our clear preference is for the Village to adopt a deliberate and pragmatic strategy, rather than one that is accidental or reactionary, to engage with residents and property owners about revitalization and redevelopment.

Short-Term Priorities:

- The Village needs to consider transitioning to a home rule form of government, which will create additional

resources that we believe the Village will need in the future.

- Make strategic decisions regarding existing Village owned land, to encourage assemblage of larger sites for eventual development.
- Identify opportunities for RFQ / RFP's to encourage redevelopment of Village-owned property.
- Make strategic decisions regarding infrastructure investment.
- Expand Village economic development resources, including increased staffing.
- Coordinate with the CDC and Business Advisory Council.
- Given the constrained fiscal climate, opportunities for shared services with other local units of government should be a priority.
- Embark on a new Village branding campaign, utilizing the new logo and tagline, as well as the marketing toolkit and communications strategy.
- Install Village wayfinding signage to market and attract businesses and customers to Bensenville.
- Install banners in the Downtown and key corridors, making them more attractive and marketable.
- Install Village entryway and community message center signage in 2013.
- Create and implement the Façade Improvement Program for businesses in 2013.
- Invest in the Town Centre Park by adding hardscape features (e.g. water feature, bandshell) to make a more active public space while making the amenity more identifiable.

With respect to economic development, for the vast majority of communities, economic development services boil down to marketing and attraction of retail only. However, given the array of companies and economic development opportunities present in and around Bensenville, we believe there is a clear and present need for the Village to adopt a more aggressive stance with respect to economic development. This effort needs to begin with implementation of current marketing efforts to further shift traditional perceptions, essentially delivering to the region an "open for business" message. As we now understand timing for EOWA and OMP projects, it would seem that this marketing effort should be incremental, rather than dramatic.

Mid-Term Priorities:

- Research the technical feasibility of a regional business / manufacturing incubator.
- Help local companies expand export opportunities to global markets, particularly in Asia and Latin America.
- Partner with local educational institutions and companies to support workforce training, particularly in support of export opportunities. Partnerships with local educational institutions will be needed.
- Develop a sustained business retention and expansion program. Organization such as the International Economic Development Council provide training and best practices to implement business retention programs, as well as export assistance.
- Implement real estate market studies focused on the downtown area to confirm demand for urban housing and retail niches.
- Continue discussions with CP to understand their plans to increase intermodal activity at their Bensenville Yard. With expected growth in intermodal, helping local companies benefit from this evolving asset will be important.

- Develop a more unified marketing message for communities on the southwest side of O'Hare International Airport.
- Work with local companies to expand foreign trade zone opportunities, as part of an overall retention strategy.
- Pursue grant funding opportunities in an organized and cohesive way, supported by local match dollars.
- Work with local companies to explore rooftop solar installation potentials as well as the use of Property Assessed Clean Energy (PACE) program financial support, which allows property owners to self-assess for renewable energy improvements.

PRIORITY - STRATEGIC INFRASTRUCTURE INVESTMENTS

The FAA Compatibility Plan identifies and develops specific, strategic infrastructure priorities. Plan recommendations begin with work already underway by the Village to reinvest in existing infrastructure, particularly in the Northern and Eastern Business Districts. Efforts build from work already underway. For example, work in SSA 3-8 is complete. Work in SSA 9 remains challenged by legal proceedings; appeals have been filed.

Near-Term Priorities :

- Finalize reconstruction planning for the Eastern Business District, covering streets such as Evergreen. Final decisions regarding these improvements should be dependent on further conversations with impacted businesses, as well as related land acquisition related to the EOWA.
- Finish construction work in SSA 9 in 2013.
- Begin planning for streetscape improvements starting with Irving Park Road in 2013
- Implement Quiet Zones on the CP/ Metra rail line in 2013
- Make improvements to the Metra Station in 2013
- Complete Green Street / York Road water main work and street resurfacing in 2013
- Complete downtown streetscape work by 2014
- Complete Foster Avenue Resurfacing in 2015
- Complete construction of a new joint Village / Canadian Pacific Police facility to remove a blighted building, in support of Green Street revitalization, by 2015.
- Continue planning for identified stormwater improvement projects in the Silver Creek and Addison Creek Watersheds.
- Complete traffic studies to assess the need to reconfigure intersections on or near IL Route 83, possibly including Bryn Mawr, Hillside, and Brookwood/Marshall. With the economic recovery underway, truck traffic at these intersections will likely increase over time.
- Linked with the EOWA, ensure that easement rights along the key corridors have been protected.
- Work with the Village of Wood Dale to resolve stormwater flow concerns in the area of Irving Park Rd. and IL Route 83.

These priorities should all be captured within the Villages's current Five-Year Community Investment Plan (CIP).

Mid-Term Priorities :

- Evaluate opportunities for CNG / LNG fueling for municipal vehicle fleets. Partnerships with local trucking firms for fueling should also be evaluated.
- Complete Eastern Business District construction work in 2015 (Evergreen) and 2017 (Cook County).
- Implement identified stormwater improvement projects
- Begin study of major road improvement projects, including the Meyer Road Extension to Irving Park Road.
- Discuss strategies for managing truck traffic through the Brookwood / Marshall / IL Route 83 area.
- Implement major road projects, beginning with Meyer Road Extension
- A copy of the Village of Bensenville Community Investment Plan follows.

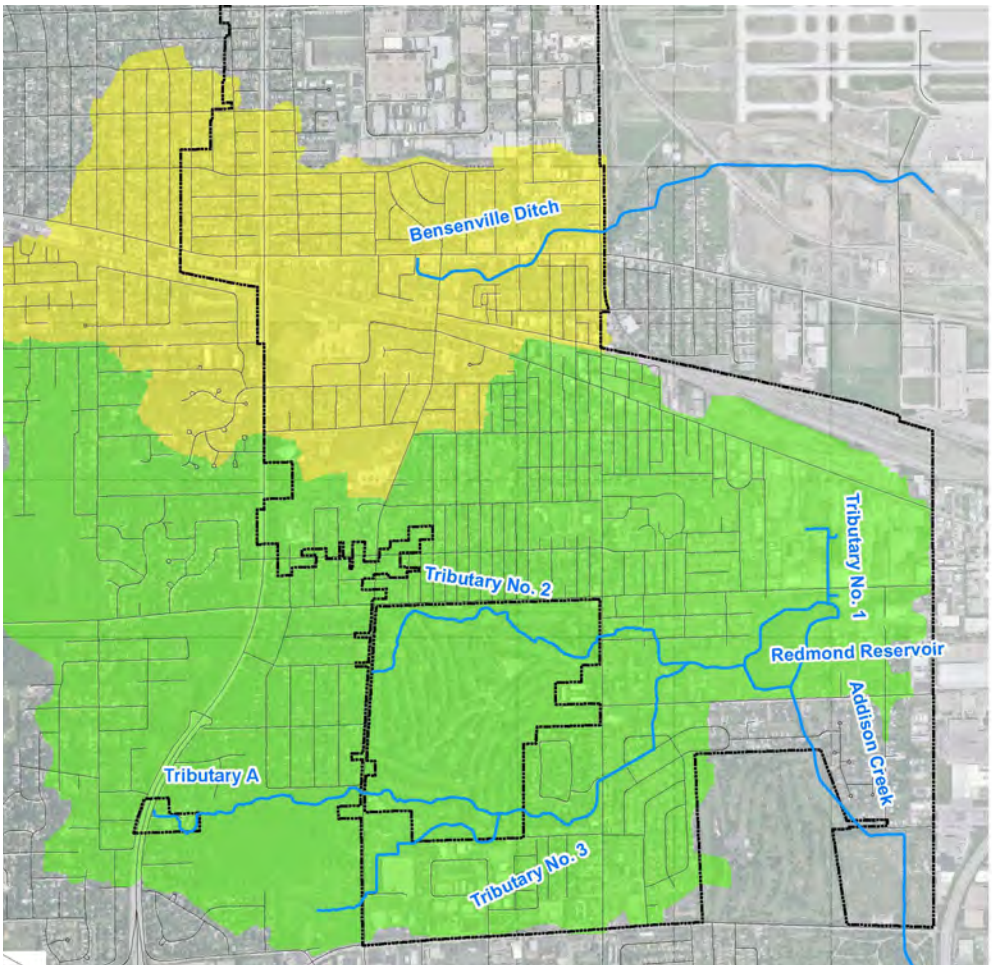
Stormwater Improvement Discussion

As part of the FAA Compatibility Plan, AECOM evaluated existing drainage and flooding issues within the Silver Creek and Addison Creek watersheds. As part of the effort, hydraulic and hydrologic models of the drainage system were developed to support the evaluation of alternatives. Preliminary construction cost estimates for the alternatives were identified. The watershed boundaries defined in the adjacent chart. Key short-term priority projects include:

- Project A1 - New Sewers, Wood & Addison
- Project B4 - HS / IL Route 83 Sewer & Detention
- Project B5 - IL Route 83 / Irving Park Area Sewer & Detention

Silver Creek	Description	Construction Cost (2012 dollars)	Engineering Costs (15%)	Total Project Cost
B1 – Center and Roosevelt	Sewer Replacement	$1,190,000	$178,500	$1,368,500
B2 – Grove and Wood	Sewer Replacement	$360,000	$54,000	$414,000
B3 – High School / Church & Main	Sewer Replacement	$1,460,000	$219,000	$1,679,000
B4 – High School / IL Route 83 & Irving Park	New Sewers and Detention Basins	$6,610,000	$991,500	$7,601,500
B5 – IL Route 83 and Irving Park	New Sewers and Detention Basin	$5,950,000	$892,500	$6,842,500
B6 – Glendale and Franzen	Sewer Replacement	$1,860,000	$279,000	$2,139,000

Addison Creek	Description	Construction Cost (2012 dollars)	Engineering Costs (15%)	Total Project Cost
A1 – Wood and Addison	New Sewers (option for additional detention)	$6,890,000	$1,033,500	$7,923,500
A2 – Belmont and David	Sewer Replacement	$8,800,000	$1,320,000	$10,120,000
A3 – Entry Drive and Bernice	Sewer Replacement	$920,000	$138,000	$1,058,000
A4 – Jefferson and Hawthorne	New Sewers	$750,000	$112,000	$862,000
A5 – Jacquelyn Drive	New Sewers and Detention Basins	$2,970,000	$445,500	$3,415,500



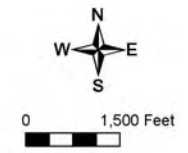


Exhibit A
Watershed Boundaries

AECOM

Key mid-term projects include:

- Project A3 - Entry Drive & Bernice Sewer Replacement
- Project B2 - Grove & Wood, Sewer Replacement

These watersheds are predominantly residential with some commercial and industrial land uses. Open space is very limited in the Silver Creek watershed (otherwise known as the Bensenville Ditch). Existing stormwater infrastructure consists of storm sewers and open ditches with some very small detention basins. The Redmond Reservoir is the only large flood control facility located within the watersheds. We worked closely with Village Public Works staff to verify the stormwater infrastructure and drainage conditions. Output from the existing conditions models was compared with known drainage and flooding problems based primarily on anecdotal knowledge of flood prone areas as well as records of drainage problems. Six problem areas were identified in the Silver Creek watershed and five problem areas were identified in the Addison Creek watershed.

The goal of the alternatives was to provide a stormwater system that would convey the 10 percent exceedance probability storm without surcharging the system through a combination of stormwater detention and storm sewer improvements. The 10 percent exceedance probability storm is more commonly known as the 10-year frequency storm. A secondary goal was to prevent overland flow conditions or surface ponding during the 4 percent exceedance probability storm. Detailed exhibits, summarized in the stormwater report (in appendix) show the general layout of the proposed sewer improvements and the general location and size of potential detention basin areas. The layout and configuration of the detention basins would be refined during final design. Additional coordination and analysis will be required to optimize the alternatives and take into account future development and land use needs. The full report also includes sections on recommendations for implementation and a brief discussion of potential funding sources, including the concept of a stormwater utility.

STRATEGIC OPPORTUNITIES

Foreign Trade Zones

Beyond marketing, one area where expanded local economic development resources could benefit relates to the advancement of Foreign Trade Zone capacity in Bensenville. A Foreign Trade Zone (FTZ) is a federal trade designation for an area that is within or adjacent (within 60 miles) to a U.S. Port of Customs and is legally considered to be outside of the U.S. Customs territory to provide certain taxation and procedural advantages for companies participating in foreign trade. FTZ's were authorized in 1934 under the Foreign Trade Zones Act. A FTZ provides special procedures regarding duty-free recognition for goods, deferment of duty payments and expedited customs processing. Benefits include:

- Goods can be imported without the associated tariffs, which is particularly useful for manufacturers who import components for final assembly.
- Goods within an FTZ can be stored there without time limits.
- There can be exemptions from certain state and local sales and personal property taxes, if deemed applicable.
- Special benefits for local employment and income creation.
- Expedited customs processing of goods and finished products for manufacturers that sell exclusively to foreign markets, they are able to import the components

Renewable Energy

AECOM has identified a series of broader infrastructure goals involving renewable energy which will help sustain the competitive position of the village, while also potentially reducing village operating costs. Nationally, the use of renewable fuels nationwide continues to grow, in spite of press coverage to the contrary. The most recent release of energy consumption statistics reported that between 2004 and 2008, renewable energy consumption in the US grew by an annualized rate of 4.2 percent despite a 0.7 percent annualized decline in fossil fuel consumption. Of various renewable energy sources, wind was the top growth sector at an annualized rate of 40 percent, which was followed by Solar Thermal/PV Energy at 10.5 percent. Several trends have supported growing demand for renewable energy in the US:

- Growing energy demand. Over the past thirty years, demand for energy in the US has been growing steadily, a trend driven by population increases and industrial growth. This growing demand has been particularly strong in electricity and liquid fuels.
- Concerns over energy independence. Growing concerns over the impact of fossil fuels on climate and a need for enhanced energy security and self-sufficiency is driving a shift in US energy policy in favor of renewable energies. Growing political support for renewable energy is based upon the premise that renewable energy will ultimately decrease greenhouse

gas emissions, and more importantly, decrease US reliance on foreign oil.

- Incentives. Increasingly, federal, state and local governments are incentivizing renewable energy through the use of market and production-based incentives to help offset the price disadvantage renewable energies have over traditional fuels sources. While the incentive structure in Illinois currently favors wind power, the structure of incentives is shifting to favor other forms of renewable energy as well.

Areas of focus for Bensenville could include:

- Geothermal / District Heating and Cooling
- Rooftop Solar Installations

Rooftop solar is viewed as one likely opportunity. AECOM experience also points to evolving national and state level interest in rooftop solar. While current state incentives for solar photovoltaic installations are limited, the state does maintain a 25% renewable energy standard (RPS), with an expectation to increase the solar percentage of the RPS from 0.5% in 2013 to 6% by 2026. As evidence for potential growth, the state of New Jersey has a more aggressive RPS, requiring 22.5% of sold electricity to be from renewable sources by 2021, generating a minimum of 2,518 gigawatt-hours (GWh) from in-state solar facilities by 2021. The array of industrial buildings in the Northern Business District are a strong candidate for roof-top solar. As a practical example, there is a current project in Chicago's West Pullman neighborhood which was completed in 2010 on a 41-acre site and has a capacity of 10 megawatts, generating a potential for 14,000 megawatt-hours annually, serving between 1,200 and 1,500 homes. As well, from a financial standpoint, the State of Illinois is evaluating the implementation of the PACE program, otherwise known as Property Assessed Clean Energy, which allows willing property owners to self-assess costs for renewable energy systems. Costs for renewable systems are applied to the property owners property tax bill. The Village should look into implementation of this program.

FUNDING OPPORTUNITIES

As noted before, the current environment for local, state and federal funding remains challenged. While the State of Illinois continues to slowly recover, local units of government continue to struggle with slow recovery in revenues, and apparent faster recovery in operating costs. In this context, the first clear benefit of plans such as this one is to demonstrate to elected leaders the extent of consensus that has been achieved regarding community priorities and vision.

Starting at the Federal level, it will be important for Bensenville to evaluate how local priorities align with identified federal economic development priorities. At present, Federal priorities related to economic development have been identified by the US Economic Development Administration (EDA). These priorities include:

1. Is the program a national strategic priority?
2. Is it in an economically distressed or under served market?
3. Is there a positive return on investment from Federal spending on the project?
4. Does it encourage regional collaboration?
5. Does it support public / private partnerships?

Within these five priorities, there is a clear focus on efforts to bolster technology-led economic development, with a focus on support to small- and medium-sized businesses, aligned with efforts to improve global competitiveness and innovation through commercialization of research, and/or environmentally sustainable development. Also remarkable is the goal of encouraging regional collaboration and moving beyond existing governance silos.

While research identified an array of grant programs that are available through federal and state agencies, the reality is that these grant programs can change from year to year, and many programs are quickly oversubscribed. In this context, the Village should consider the hiring of a grant writer to maximize value of these efforts. Success with grants links to:

- A focus on smaller grants under $1M
- A focus on extraordinary needs, or to fund innovative solutions

Noted grant ideas can focus on the following questions:

- Are there high accident locations near intermodal yards or schools, or high ADT's entering onto local streets
- Flooding issues particularly where contaminated run-off is getting into sensitive ecosystems
- Unique wetlands, or missing links in recreational trails
- Cleanup of brownfield sites for near-term development.

Grant ideas to consider include:

- Small grants to local governments for green infrastructure - http://www.epa.gov/urbanwaters/funding/
- Grants for Brownfield Remediation (1) Workforce Training and Development and (2) Multi-purpose

clean-up - http://www.epa.gov/brownfields/news/index.htm

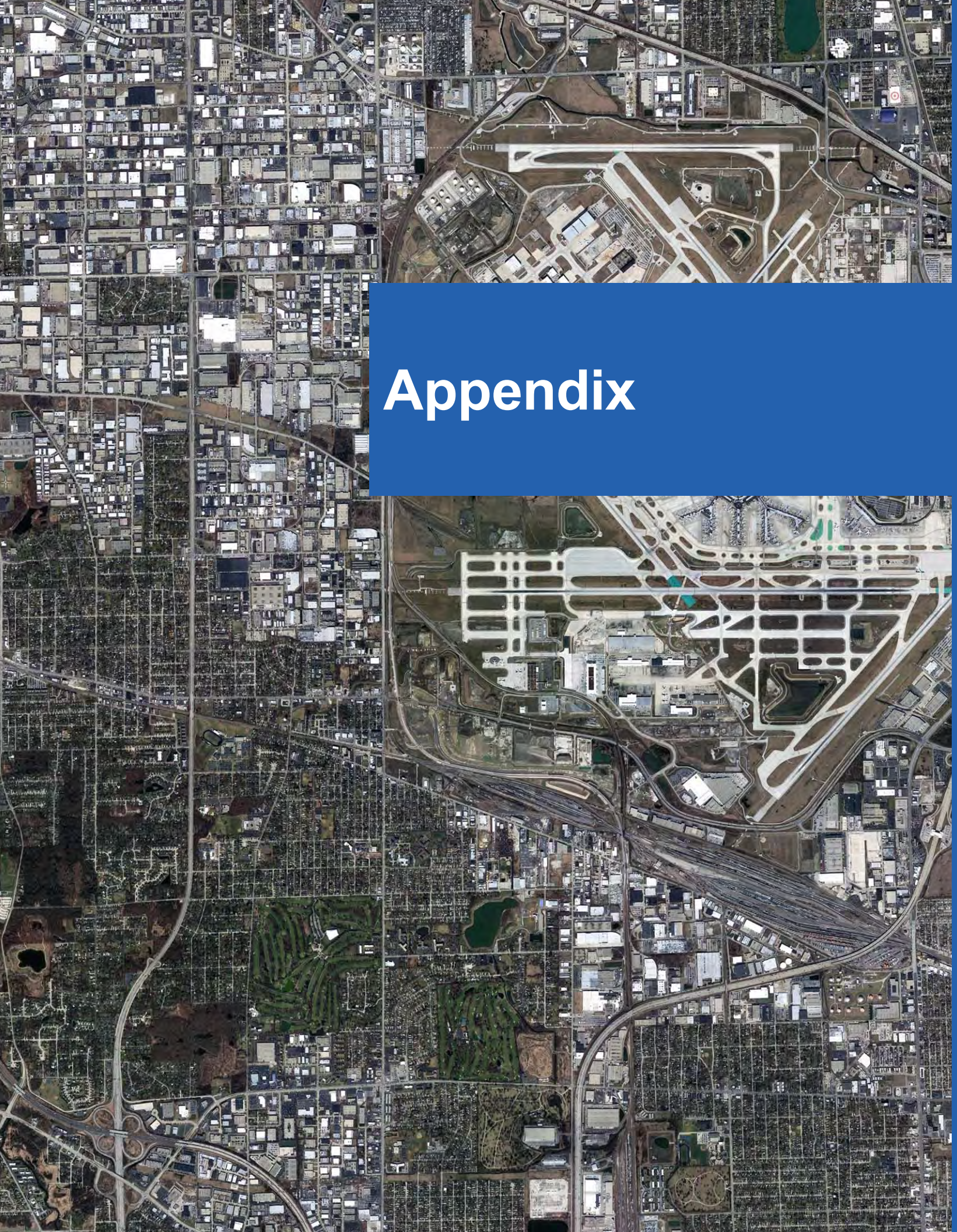
- US DOT grants for transportation community and system preservation - http://www.fhwa.dot.gov/tcsp/lso
- IDOT – Grade Crossing Protection Funds to maintain and improve grade separations
- IDOT – Economic Development Program – provides state assistance for projects that will have economic development benefits.
- IDOT Division of Public & Intermodal Transportation

OUTCOMES

In total, the intent of the FAA Compatibility Plan is to help the Village of Bensenville adjust to dramatic change over the next 15 to 20 years, laying out a comprehensive strategy for moving forward. The plan needs to be realistic, acknowledging that the community has to this point, been negatively impacted by OMP expansion. Analysis of local equalized assessed valuations would suggest that the Village tax base declined by about $50 million in value annually through 2010, above and beyond broader recessionary impacts.

The plan lays the groundwork for future progress, in part by focusing on pragmatic near term work efforts, ranging from targeted infrastructure and stormwater improvements to implementation of quiet zones, and discussion of emergency water connections. More broadly, the plan provides a vision for how the Village can benefit in the future from the EOWA and proximity to O'Hare.

Aviation linked opportunities link broadly with the related concepts of Airport City and Aerotropolis, which speak to opportunities for higher value real estate development, which link directly with enhanced airport access, as well as the ability to link directly with overseas export markets in Asia and South America.



Appendix

Appendix

CONTENTS

Streetscape Recommendations

EXISTING CONDITIONS

Typical elements of a right-of-way include travel lanes, parking lanes, sidewalks, and pedestrian amenities or streetscape elements. In the study area, the right-of-way features along a given corridor vary in keeping with the surrounding land use; most corridors are auto-oriented with travel lanes that accommodate truck access, whereas downtown Bensenville has a more pedestrian-oriented character, reflected in the street and right-of-way features present near the Metra station.

Plans, sections, and descriptions of existing conditions for key corridors are provided on the following pages. The corridors analyzed in this study include the following:

- Center Street / Downtown Streets
- Foster Avenue
- Irving Park Road
- Green Street
- York Road
- Illinois Route 83

Most of the corridors, with the exception of Center Street, are intended to accommodate large volumes of truck traffic. General existing site features along these auto-oriented corridors include the following:

- Multiple, wide lanes designed to accommodate high volumes of truck traffic
- Limited landscape along rights-of-way, occasionally included in parkways but rarely in medians, which are typically striped or concrete
- Limited pedestrian and bicycle accommodations
- Rural cross-section for majority of streets, with gravel shoulder and ditch rather than curbs
- Overhead utility poles along several corridors adds to visual clutter
- Arterial streets have no distinct character; there are limited amenities to attract visitors and encourage Bensenville to serve as a destination

RECOMMENDED IMPROVEMENTS

The proposed streetscape treatments for the corridors are organized by “levels” in order for the Village to better evaluate options based on funding and coordination amongst the various public agencies that are involved with the systems of these treatments. The levels referenced in the following pages are described as follows:

- Level 1: Landscape improvements
- Level 2: Improvements to street lights, paving, and/or utilities
- Level 3: Pageantry and banners
- Level 4: Street furnishings and wayfinding
- Level 5: Specialty elements, such as monuments and signage

Not all sites recommended for improvements include all levels of streetscape treatments.

The ultimate goal would be for all the treatments to be implemented as proposed, but the treatment with the least cost and greatest impact would be the Level 1 landscape treatment, focusing on installation of shade trees. Level 1 improvements could be implemented as a first phase, creating an immediate effect to enhancing the character and identity of the Village.

DOWNTOWN STREETS

Existing Conditions

The downtown streets have traditional style pedestrian-scale lights, but they have inconsistent placement of street trees, planters, and pavers.

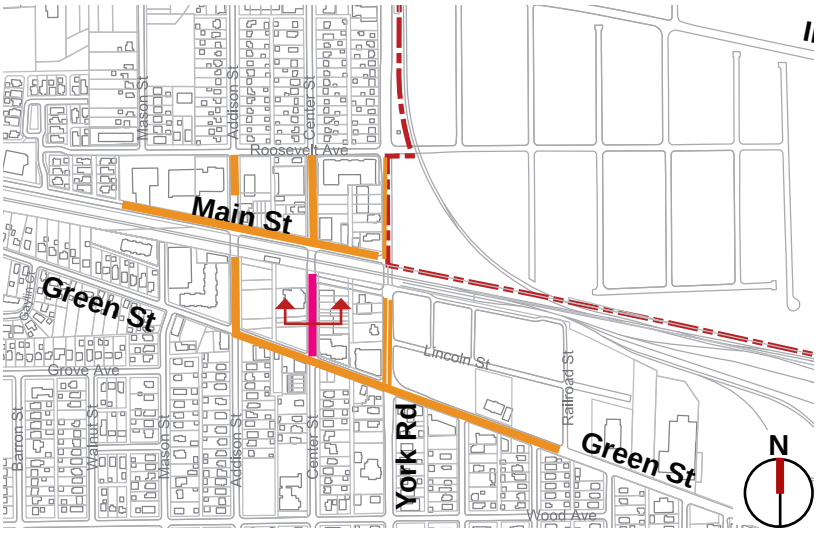
Center Street, from Green Street to Main Street, has been identified as the core downtown street due to the scale of the existing adjacent retail, Village Hall, and the potential for it to become a stronger event street.

Typical right-of-way features along downtown streets include:

- Urban, downtown street character includes curb and gutter
- Wide paving accommodates perpendicular or diagonal parking in several locations
- Lanes are wider than needed for the traffic volumes and speeds
- Typical downtown character includes pedestrian-scale lights, street trees, planters, and pavers; in some areas, pedestrian zones are differentiated from utility zones, which are designated with pavers

View south on Center Street, at Village Hall.

RECOMMENDED LOCATIONS FOR IMPROVEMENTS

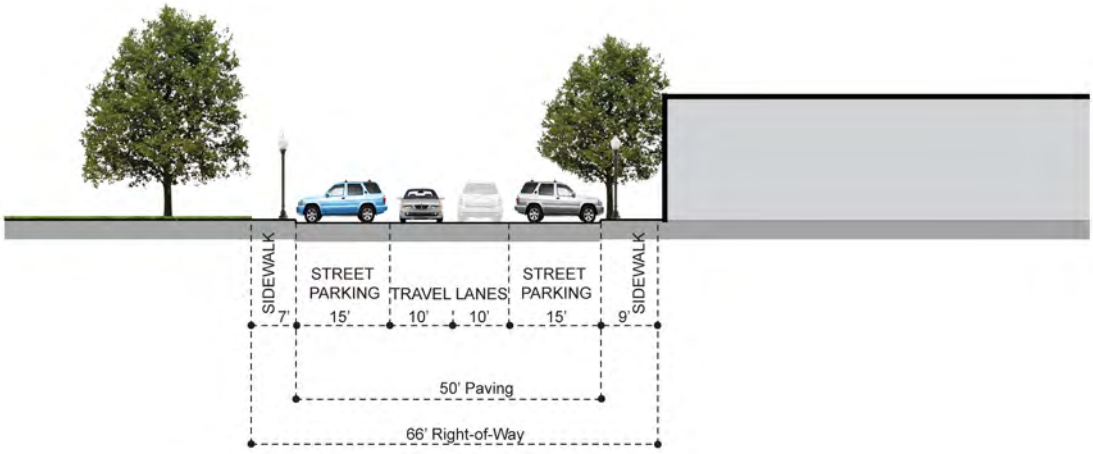


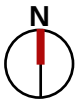
Core Downtown Street: Center Street
Level 1: Canopy Trees
Level 2: Street Light + Paving Improvements
Level 3: Pageantry
Level 4: Street Furnishings + Wayfinding
Level 5: Specialty Elements

Secondary Downtown Streets
Level 1: Canopy Trees
Level 2: Street Light Improvements
Level 3: Pageantry
Level 4: Street Furnishings + Wayfinding

Village of Bensenville
Section Cut

EXISTING SECTION AND PLAN: CENTER STREET





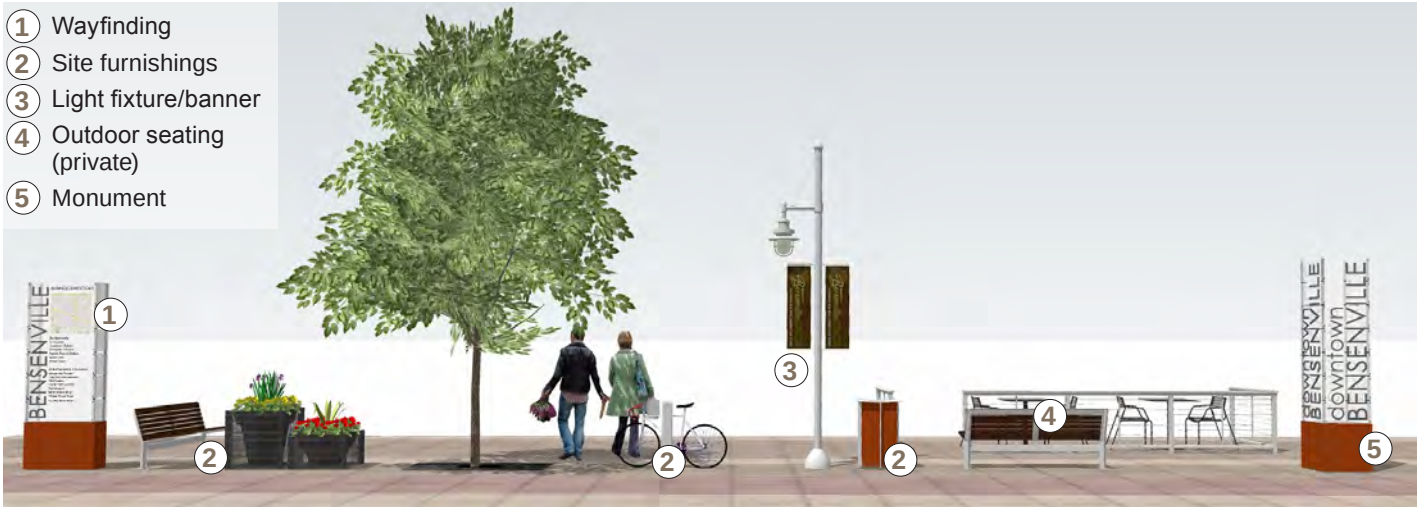
DOWNTOWN STREETS

Recommended Improvements

The proposed streetscape narrows the street by eliminating angled parking on the east side of Center Street and introducing parallel parking to allow a wider sidewalk. The wider sidewalk allows for a more comfortable pedestrian environment as well as the installation of streetscape elements to enhance the public realm environment of Downtown Bensenville, including street trees, decorative lighting, signage for wayfinding, and street furniture to promote pedestrian activity. Center Street would also feature a banded decorative paving pattern that extends across the roadway and integrates with the sidewalk paving.

RECOMMENDED STREETSCAPE ELEMENTS

1. Wayfinding
2. Site furnishings
3. Light fixture/banner
4. Outdoor seating (private)
5. Monument



CORE DOWNTOWN STREET CONTEXT (CENTER STREET)

Recommended Streetscape Improvements by Level:

Level 1: Install additional street trees as needed to create a consistent canopy.

Level 2: Street Light Improvements

- At all core and secondary downtown streets, create a downtown identity with the use of a contemporary pedestrian-scaled street light.
- Paving improvements at Center Street to enhance pedestrian environment and create plaza feel across the street for events.

Level 3: Banners to promote downtown events and create identity

Level 4: Site Furnishings + Wayfinding

- Create a family of site furnishings to enhance the downtown identity
- Wayfinding elements at key locations

Level 5 (Center Street only): Specialty Elements

- Monuments at key intersections

Levels 1 - 2

Levels 3 - 5

FOSTER AVENUE

Existing Conditions

Foster Avenue is a key east-west industrial road through the northern business district.

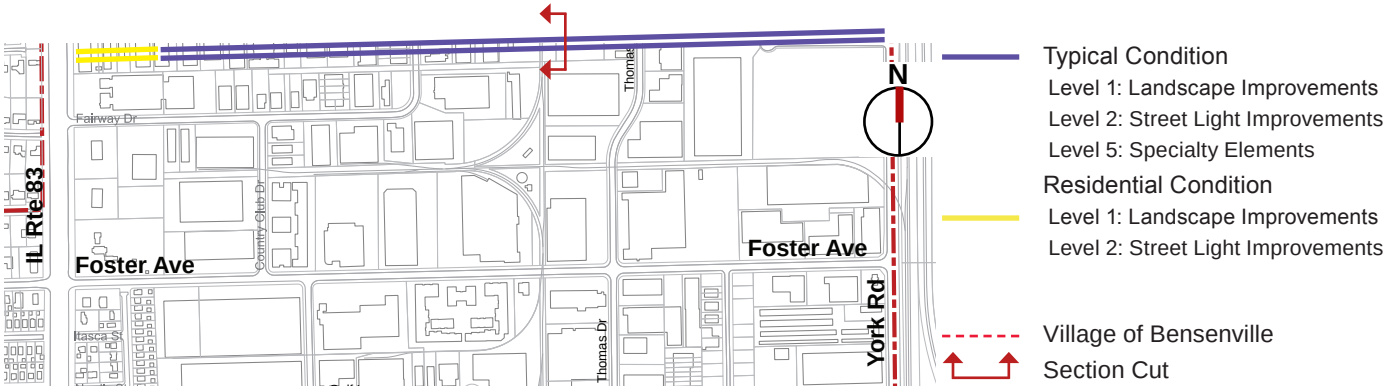
Notable right-of-way features include:

- Urban business park character, with curb and gutter
- Wide travel lanes
- Frequent, wide curb cuts associated with prominent driveways accessing buildings with deep setbacks
- Parking/loading areas fronting the right-of-way
- Occasional sidewalks with infrequent connections
- Inconsistent tree plantings

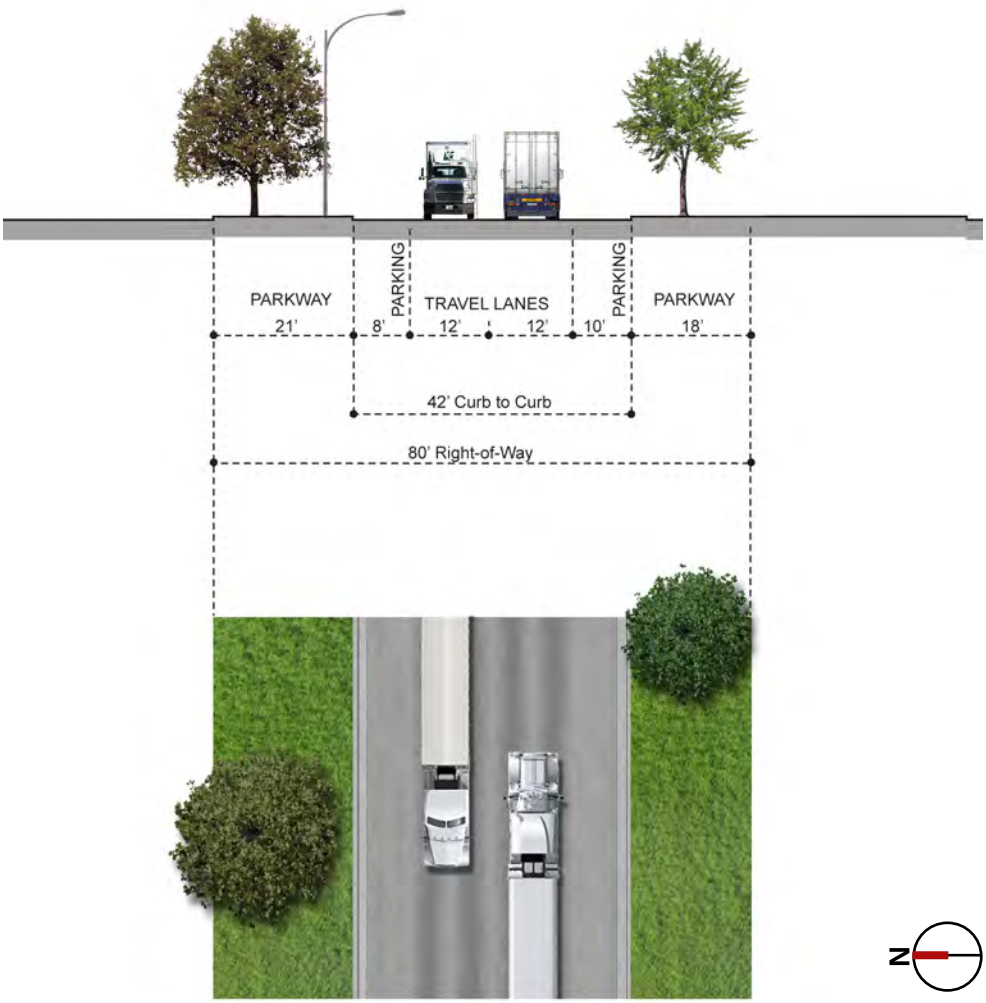
Within the private realm, the typical condition consists of large industrial buildings on either side of the street, except for the block just east of IL Route 83, where various uses are present, including residential, a church, and a gas station.

View west on Foster Avenue, 1 block east of York Road.

RECOMMENDED LOCATIONS FOR IMPROVEMENTS



EXISTING SECTION AND PLAN: FOSTER AVENUE



FOSTER AVENUE

Recommended Improvements

For the typical condition along Foster, incorporating an industrial context, recommendations address landscape improvements, including installation of shade trees and a shrub hedge to screen parking; street lighting improvements; and signage and wayfinding. At the western-most block of the corridor, including the residential area and church, a lesser degree of streetscape is necessary: only landscape enhancements and street lighting improvements are recommended.

RECOMMENDED STREETSCAPE ELEMENTS

FOSTER AVENUE: TYPICAL CONDITION (INDUSTRIAL CONTEXT)

Recommended Streetscape Improvements by Level:

Level 1: Landscape Improvements

- Install shade trees at 25'-35' on center
- Install shrub hedge to screen parking areas

Level 2: Street Lighting Improvements

- Create identity with consistent use of industrial-style light fixture
- Install industrial metal screen around light pole for vines to climb

Level 5: Signage + Monuments (Industrial context only)

- Enhance identity with industrial-style markers at key intersections
- Encourage consistent building signage in the same style

Levels 1 - 2

Levels 3 - 5

IRVING PARK ROAD

Existing Conditions

Irving Park Road is an east-west arterial that typically reflects a commercial context, although the north side of the street between IL Route 83 and Church Road is lined with residential.

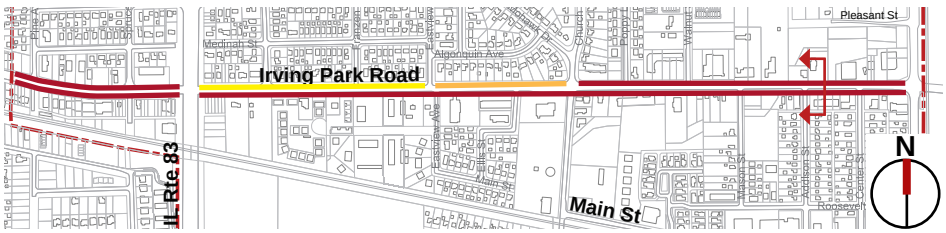
Notable right-of-way features include:

- Urban arterial character, with curb and gutter
- Eleven-foot lane width accommodates truck traffic without encouraging fast traffic
- Sidewalk and parkway on north side of street are located in utility right-of-way rather than public right-of-way; overhead utilities are present along the corridor
- Continuous sidewalks; in some areas, pedestrian zones are differentiated from utility zones, which are designated with pavers
- Street grid to the north and south does not align, although the block pattern is relatively urban with cross streets typically present every 500 to 800 feet
- Residences between Church Road and Eastview Avenue back up along Irving Park; the right-of-way is lined with fences. West of Eastview, houses face Irving Park, and driveways are accessed from Irving Park.
- Frequent curb cuts at commercial area on east end of corridor

View west toward Marshall Road.

- Pace bus #332 is routed on a portion of Irving Park, from Addison east, for eastbound trips only
- Stream corridor crosses Irving Park between Addison and Mason Streets
- Some street trees are present in parkways; tree canopy is incomplete

RECOMMENDED LOCATIONS FOR IMPROVEMENTS



Typical Condition
- Level 1: Landscape Improvements
- Level 2: Street Light + Utility Improvements
- Level 3: Pageantry
- Level 4: Site Furnishings
- Level 5: Specialty Elements + Signage

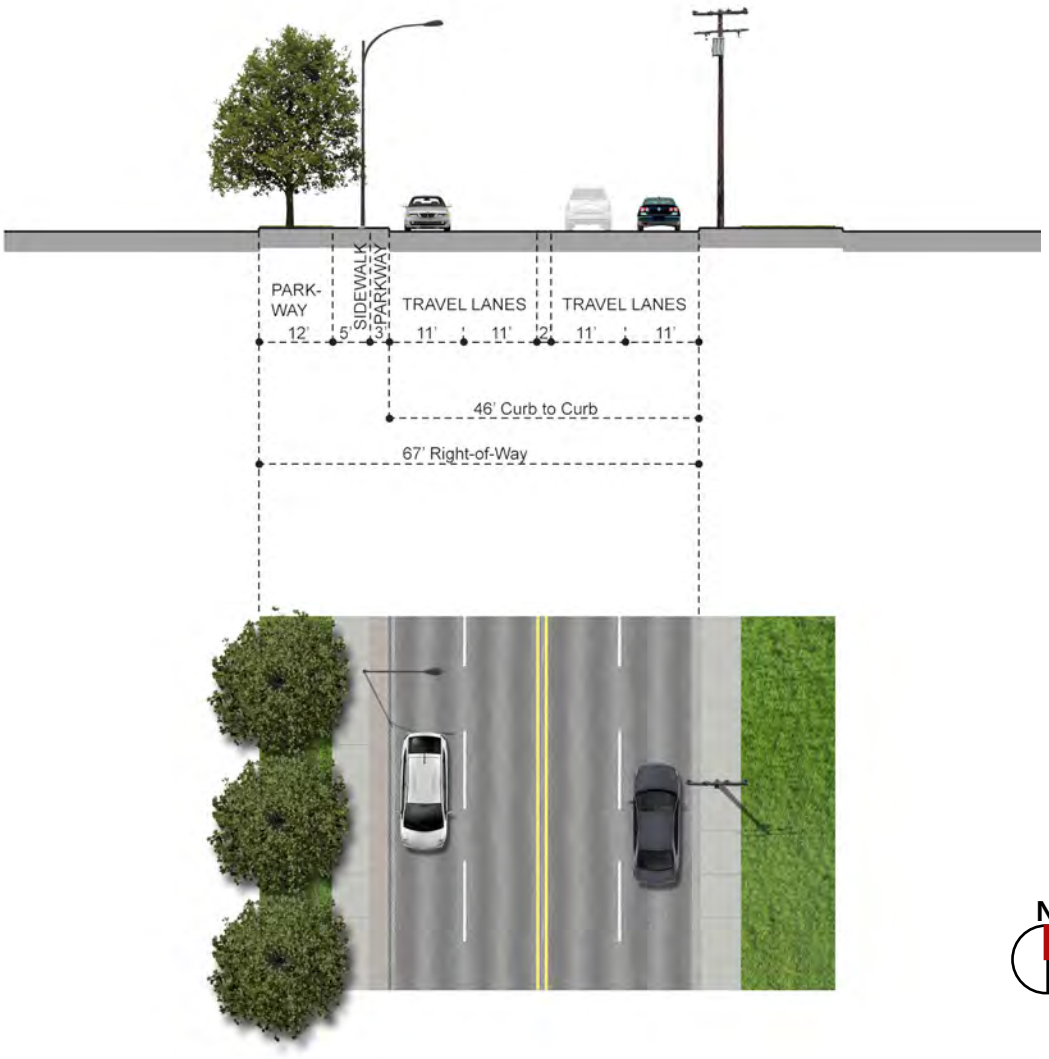
Residential (backing up along Irving Park)
- Level 1: Landscape Improvements + Fence
- Level 2: Street Light + Utility Improvements
- Level 3: Pageantry
- Level 4: Site Furnishings

Residential (facing Irving Park)
- Level 1: Landscape Improvements
- Level 2: Street Light + Utility Improvements
- Level 3: Pageantry

Village of Bensenville

Section Cut

EXISTING SECTION AND PLAN: IRVING PARK ROAD



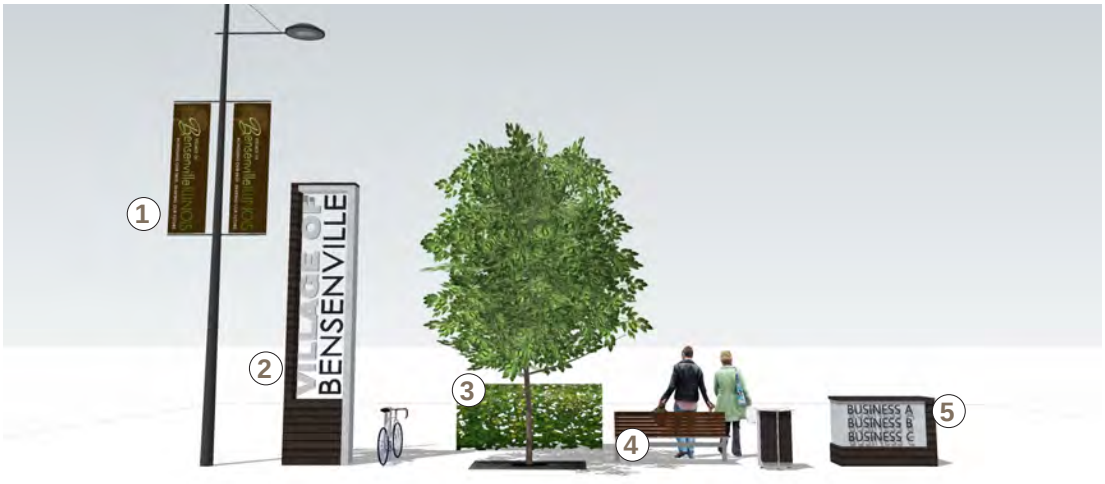
IRVING PARK ROAD

Recommended Improvements

For the typical condition along Irving Park Road, reflecting a commercial context, proposed streetscape improvements include installation of shade trees and a low shrub hedge to screen parking, as well as ornamental trees where undergrounding of utilities is not possible; contemporary light fixtures; utility improvements; banners; site furnishings; and specialty elements, including signage and wayfinding elements.

RECOMMENDED STREETSCAPE ELEMENTS

1. Light fixture/banner
2. Monuments
3. Low shrub hedge
4. Site furnishings
5. Signage



IRVING PARK ROAD: TYPICAL CONDITION (COMMERCIAL CONTEXT)

Recommended Streetscape Improvements by Level:

Level 1: Landscape Improvements

- Install shade trees at 25'-35' on center, in tree grates
- Install shrub hedge to screen parking areas
- Where future undergrounding of utility lines is not possible, install small accent trees under utility lines

Level 2: Street Lighting + Utility Improvements

- Underground utility lines where possible
- Upgrade light poles

Level 3: Install banners to promote Village and retail street identity

Level 4: Select and install a family of site furnishings to enhance the retail street identity.

Level 5: Specialty Elements + Signage + Wayfinding (commercial context only)

- Enhance retail street identity with monuments at gateways, York and IL Route 83
- Create consistent building signage by developing signage design guidelines

Levels 1 - 2

Levels 3 - 5

GREEN STREET

Existing Conditions (Industrial Context / Typical Condition)

The character of Green Street shifts from a downtown context west of York, to an industrial/residential context west to May Street, to a completely industrial context west to County Line Road. The shift in character is described below, in the overview of the industrial context (the typical condition) and residential context. The downtown context is described above as a Secondary Downtown Street.

Green Street provides a key truck route, connecting from York Road to points south and east. Southbound truck traffic on York is routed east on Green Street.

GREEN STREET BETWEEN MARION STREET AND COUNTY LINE ROAD

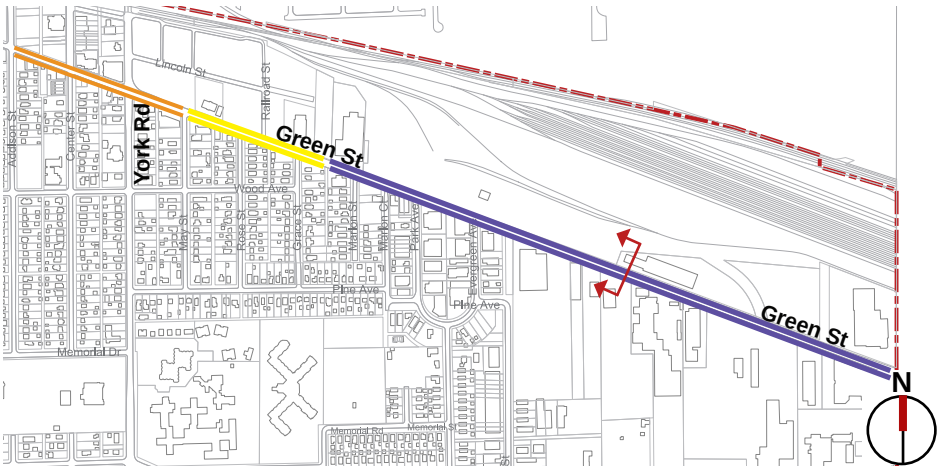
Notable right-of-way features include:

- Urban arterial character, with curb and gutter
- Wide travel lanes accommodate large vehicles and high speeds
- Poor pedestrian environment: lack of buffer between travel lanes and sidewalk, and parking lots are adjacent to right-of-way
- Sidewalks are not continuous

View west on Green Street, just west of County Line Road.

- Overhead utilities on both sides of Green Street add visual clutter
- Frequent curb cuts, particularly on south side of street; no access to the north due to rail yard /tracks and airport beyond
- Tree plantings are limited

RECOMMENDED LOCATIONS FOR IMPROVEMENTS



Typical Condition
- Level 1: Landscape Improvements (including tree hedgerow)
- Level 2: Street Light Improvements
- Level 3: Pageantry
- Level 5: Specialty Elements

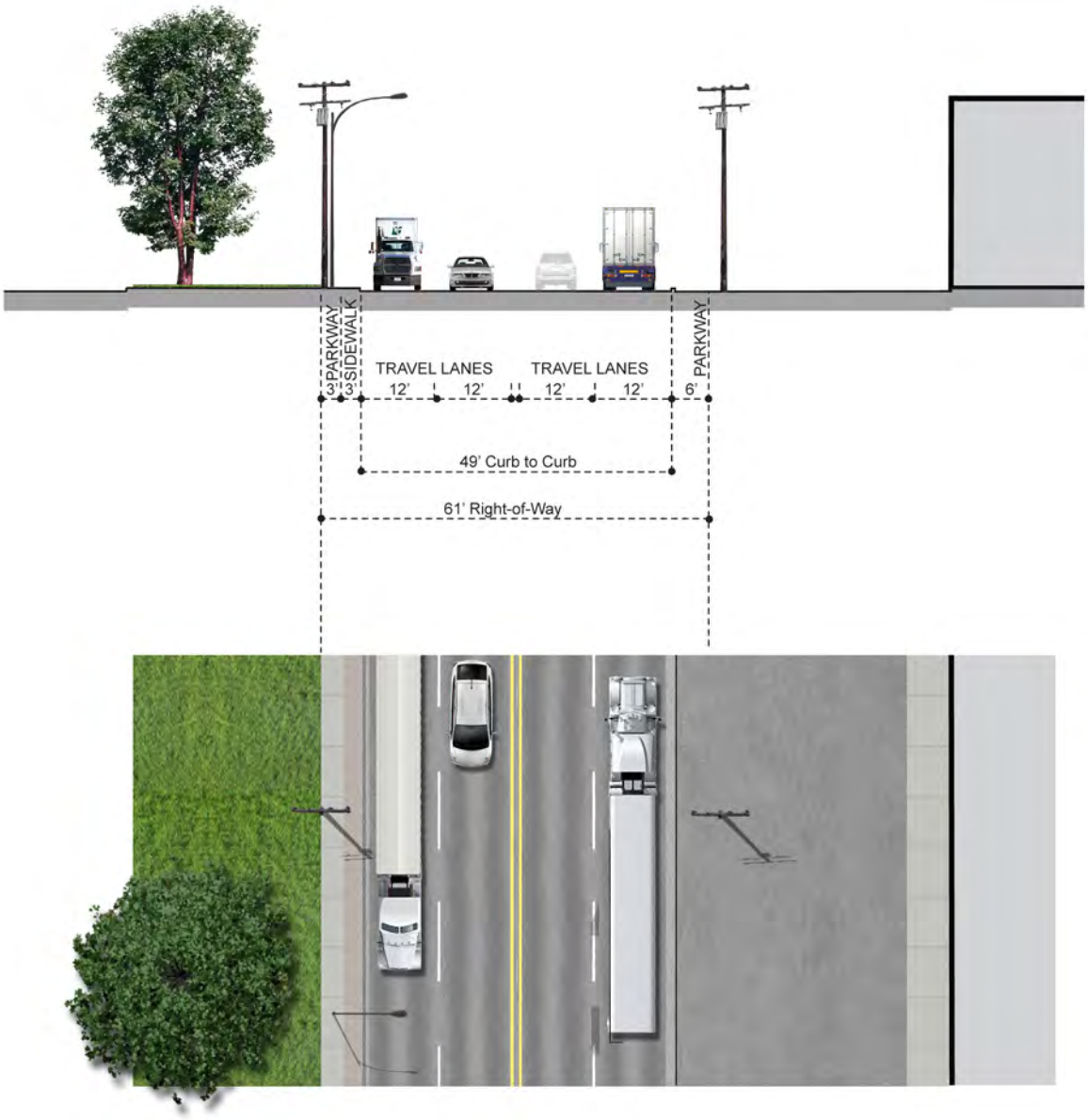
Residential Condition
- Level 1: Landscape Improvements (shade trees only)
- Level 2: Street Light Improvements
- Level 3: Pageantry
- Level 5: Specialty Elements

Secondary Downtown Street (See Downtown)

Village of Bensenville

Section Cut

EXISTING SECTION AND PLAN: GREEN STREET (INDUSTRIAL CONTEXT / TYPICAL CONDITION)



GREEN STREET

Recommended Improvements (Typical Condition)

For the typical condition along Green Street, reflecting an industrial context, recommendations address landscape improvements, including installation of a tall tree hedgerow on the north side of the street to screen the railroad, airport, and future highway, as well as ornamental trees where undergrounding of utilities is not possible; street lighting and utility improvements; banners; and monuments and signage designating the entry to downtown and identifying major tenants along the corridor.

RECOMMENDED STREETSCAPE ELEMENTS

GREEN STREET: INDUSTRIAL CONTEXT / TYPICAL CONDITION

Recommended Streetscape Improvements by Level:

Level 1: Landscape Improvements

- Tall tree hedgerow to block views to railroad, airport, and future elevated highway on north side
- Where future undergrounding of utility lines is not possible, install small accent trees under utility lines

Level 2: Street Lighting + Utility Improvements

- Create identity with consistent use of contemporary light fixture
- Bury power lines where possible

Level 3: Install banners to designate entry to downtown and identify local institutions

Level 5: Install monuments to designate entry to downtown and identify local institutions

Level 1

Levels 2, 3, and 5

GREEN STREET

Existing Conditions (Residential Context)

The truck route creates some discongruities with the portion of Green Street adjacent to residences. Most of the houses along the south side of the street face side streets, whereas residences along the north side face Green Street.

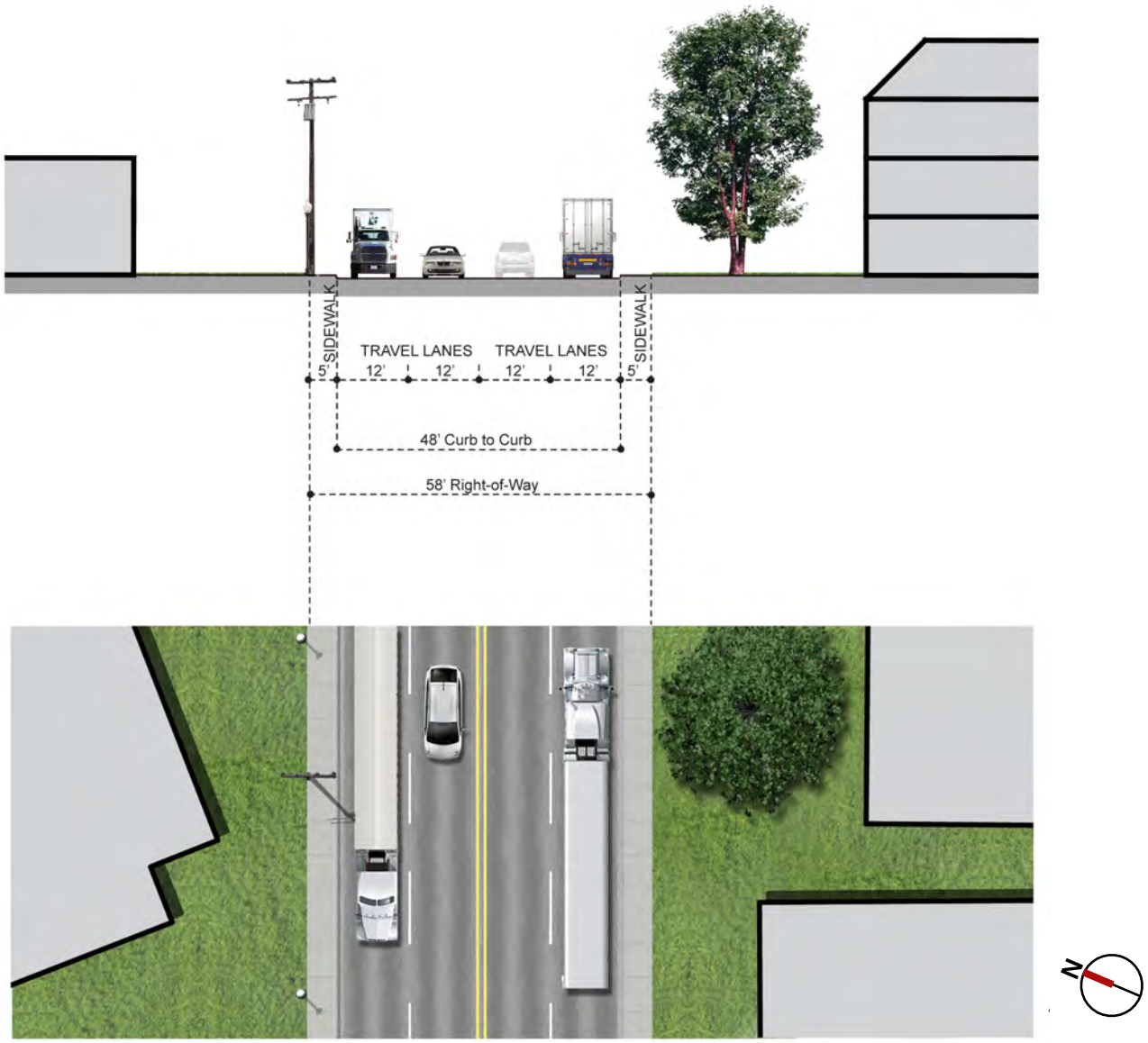
GREEN STREET BETWEEN GREEN AND MAY STREETS

Notable right-of-way features include:

- Urban arterial character, with curb and gutter
- Wide travel lanes accommodate large vehicles and high speeds
- Poor pedestrian environment: lack of buffer between travel lanes and sidewalk, and parking lots are adjacent to right-of-way
- Sidewalks are not continuous
- Overhead utilities on both sides of Green Street add visual clutter

RECOMMENDED LOCATIONS FOR IMPROVEMENTS

EXISTING SECTION AND PLAN: GREEN STREET (RESIDENTIAL CONTEXT)

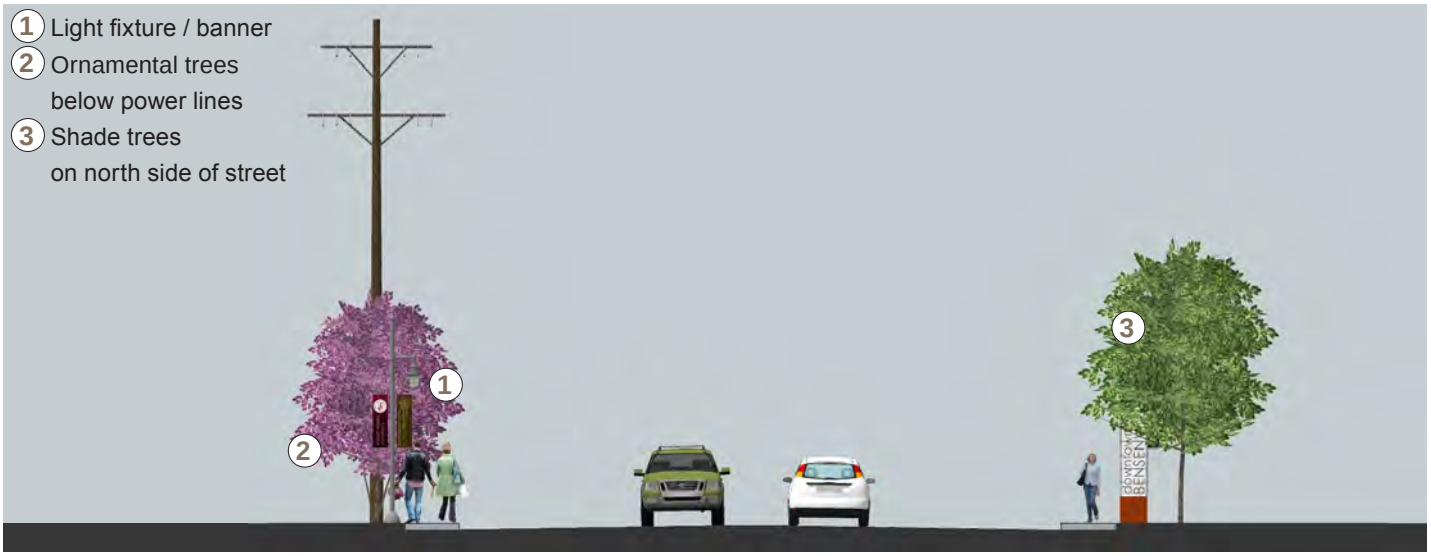


GREEN STREET

Recommended Improvements (Residential Context)

Along the residential portion of Green Street, recommendations address landscape improvements, including installation of shade trees on the north side of Green, as well as ornamental trees on the south side of the street where undergrounding of utilities is not possible; extension of the downtown lighting treatment; and banners designating the entry to downtown and identifying major tenants along the corridor.

RECOMMENDED STREETSCAPE ELEMENTS



GREEN STREET: RESIDENTIAL CONTEXT

Recommended Streetscape Improvements by Level:

Level 1: Landscape Improvements

- Install shade trees at 25'-35' on center, in tree grates
- Where future undergrounding of utility lines is not possible, install small accent trees under utility lines

Level 2: Extend installation of downtown light fixtures east to Grace

Level 3: Install banners to designate entry to downtown and identify local institutions

Levels 1 - 3

YORK ROAD

Existing Conditions

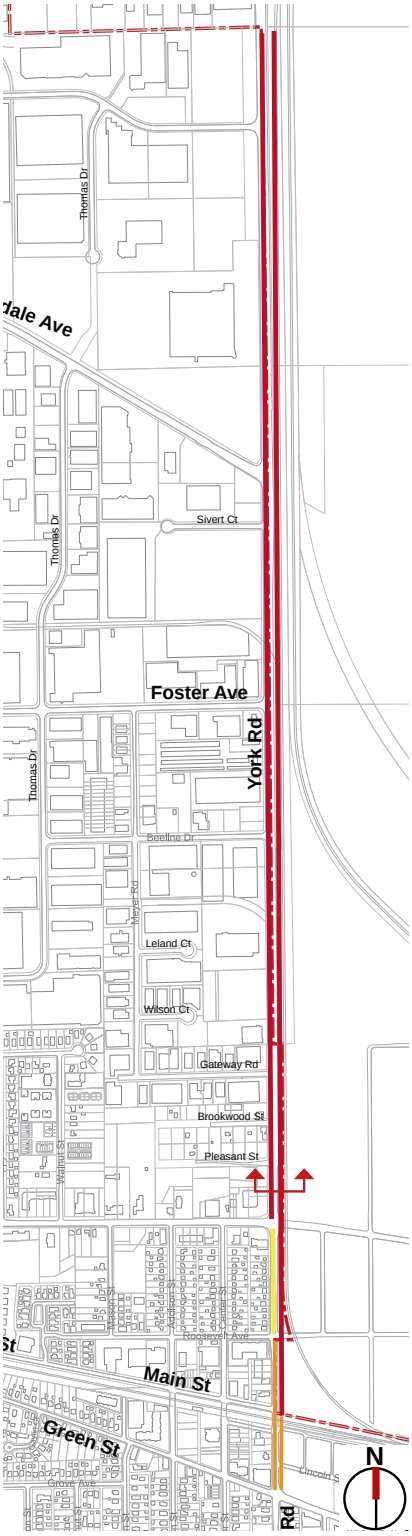
York Road is one of the main north-south arterials in Bensenville. Typically, its east side is flanked by an active railroad corridor, and O'Hare International Airport is immediately beyond the rail right-of-way.

The character is industrial from the northern boundary south to Irving Park Road, where the adjacent land use on the west side of the street shifts to residential. The downtown context begins south of Roosevelt Avenue, continuing to Green Street. At Green Street, the truck route is diverted east; truck traffic is prohibited on the residential portion of the street south of Green Street.

Notable right-of-way features along York Road for the typical, industrial context include:

- Arterial character has a mix of features typical of urban and suburban context, with curb and gutter on west side of York and shoulder on east side
- Eleven-foot lane width accommodates truck traffic; center turn lanes facilitate fast traffic speeds
- Sidewalks are not continuous; no sidewalks north of Thorndale Avenue
- Overhead utilities and billboards on east side of York along railroad add visual clutter
- Frequent curb cuts along west side of York; no crossings to the east side of York due to adjacent rail right-of-way and airport beyond
- Deep building setbacks and lack of adjacent development to the east give York an "open" character, with no enclosure
- Narrow green buffer located east of York between roadway and railroad; tree canopy is inconsistent

Recommended Locations for Improvements



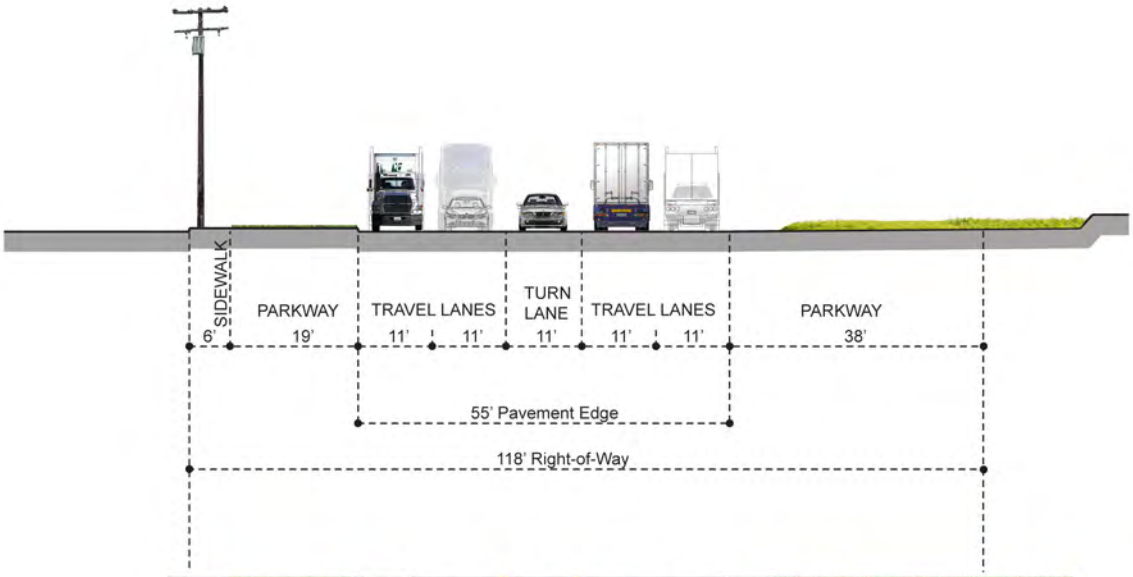
Typical Condition
- Level 1: Landscape Improvements
- Level 2: Street Light Improvements
- Level 3: Pageantry

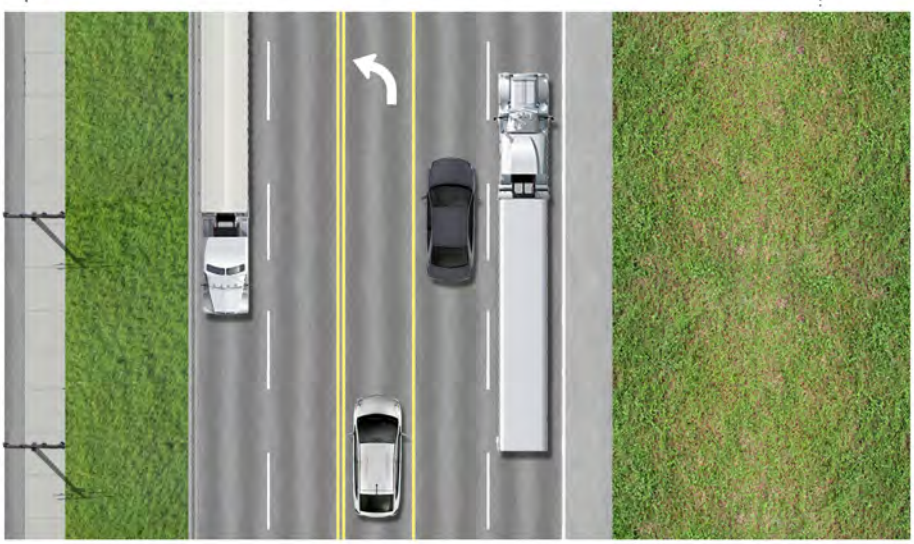
Residential Condition
- Level 1: Landscape Improvements
- Level 2: Street Light Improvements
- Level 3: Pageantry

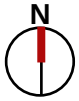
Secondary Downtown Street (See Downtown)

Village of Bensenville Section Cut

EXISTING SECTION AND PLAN: YORK ROAD (INDUSTRIAL CONTEXT)



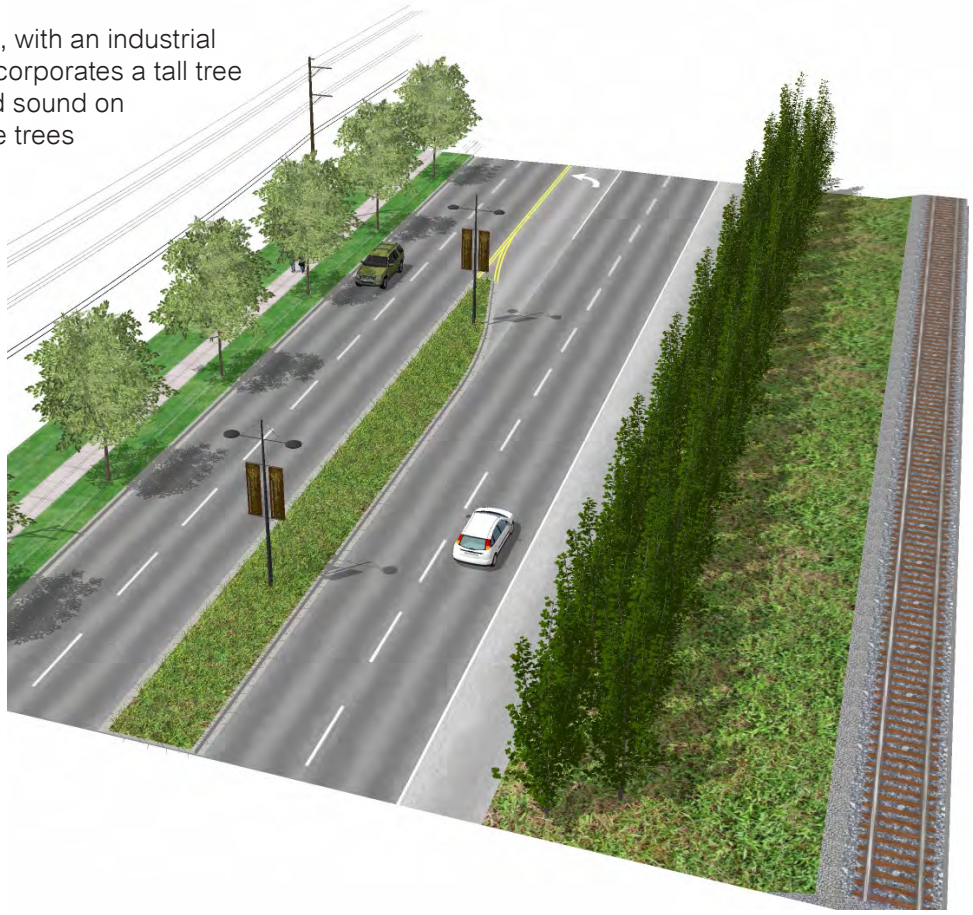




YORK ROAD

Recommended Improvements (Typical Condition)

For the typical condition of York Road, with an industrial context, the proposed streetscape incorporates a tall tree hedgerow to screen airport views and sound on the east side of York, as well as shade trees on the west side of the street, and a planted median. The tree hedgerow could be used for decorative lighting during special events and holidays. Installation of contemporary light fixtures and banners is also recommended to enhance the identity of the corridor. An alternate option is to install street lighting with banners within the planted median.



RECOMMENDED STREETSCAPE ELEMENTS

YORK ROAD: INDUSTRIAL CONTEXT / TYPICAL CONDITION

Recommended Streetscape Improvements by Level:

Level 1: Landscape Improvements

- Tall tree hedgerow to block airport views + sound on east side
- Street trees on west side installed at 30'-45' on center
- Planted median

Level 2: Create identity with consistent use of contemporary light fixture

Level 3: Install banners to promote the Village and identify local institutions

Alternate Option: install street lights with banners in planted median where possible

Levels 1 - 2

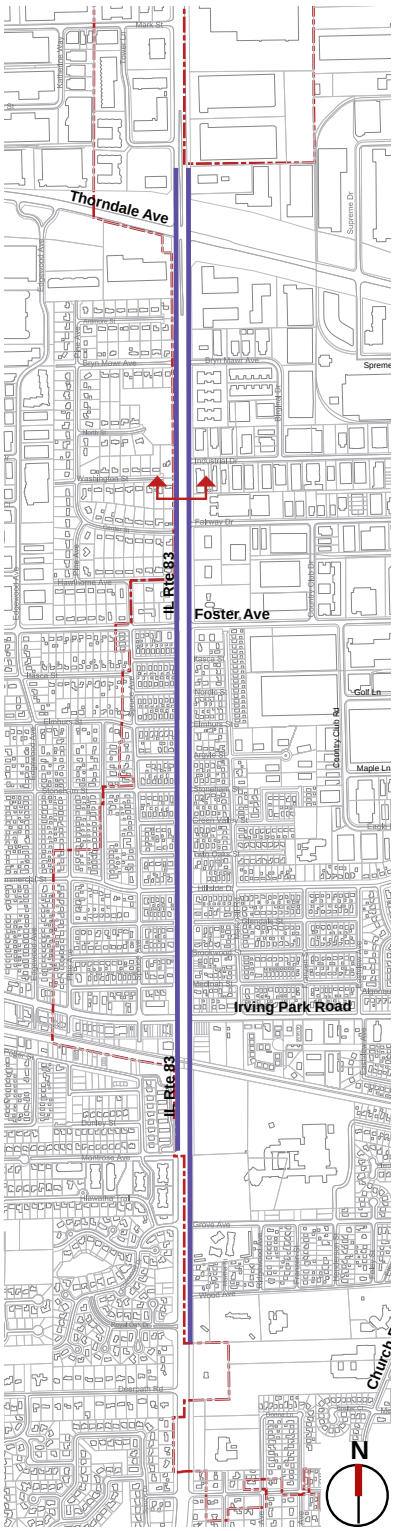
Level 3

Illinois Route 83

IL Route 83 is one of the main north-south arterials in the Village. It changes in context from industrial to residential uses; however, the roadway design does not change; it has limited curb cuts and intersections, and residential areas are designed with their “backs” to the arterial.

Notable right-of-way features include:

- Wide 204’ right-of-way accommodates three lanes of traffic in each direction as well as ditch and vegetated buffer
- Highway character: wide travel lanes to accommodate large vehicles and high speeds; paved shoulder and ditch rather than curbs
- Median is present but does not provide an amenity or visual buffer; typical condition is raised concrete, with a grass median present immediately north and south of Thorndale Avenue, approx. 0.2 miles in each direction
- Few cross streets and crossings, particularly south of Bryn Mawr to the municipal limits, where residential streets typically either terminate at or back up against IL Route 83

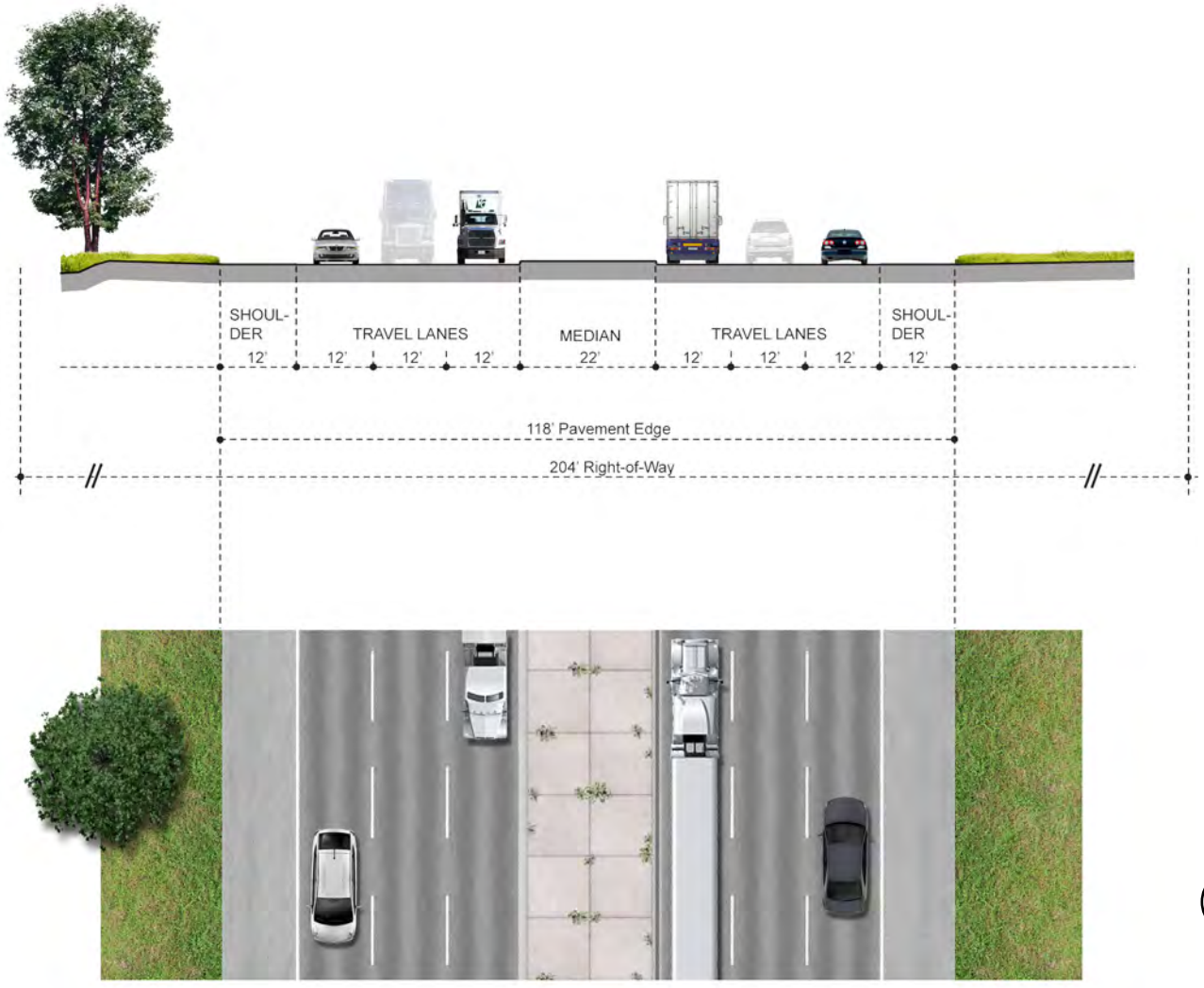


Recommended Locations for Improvements

Typical Condition
Level 1: Landscape Improvements
Level 2: Street Light Improvements
Level 3: Pageantry

Village of Bensenville Section Cut

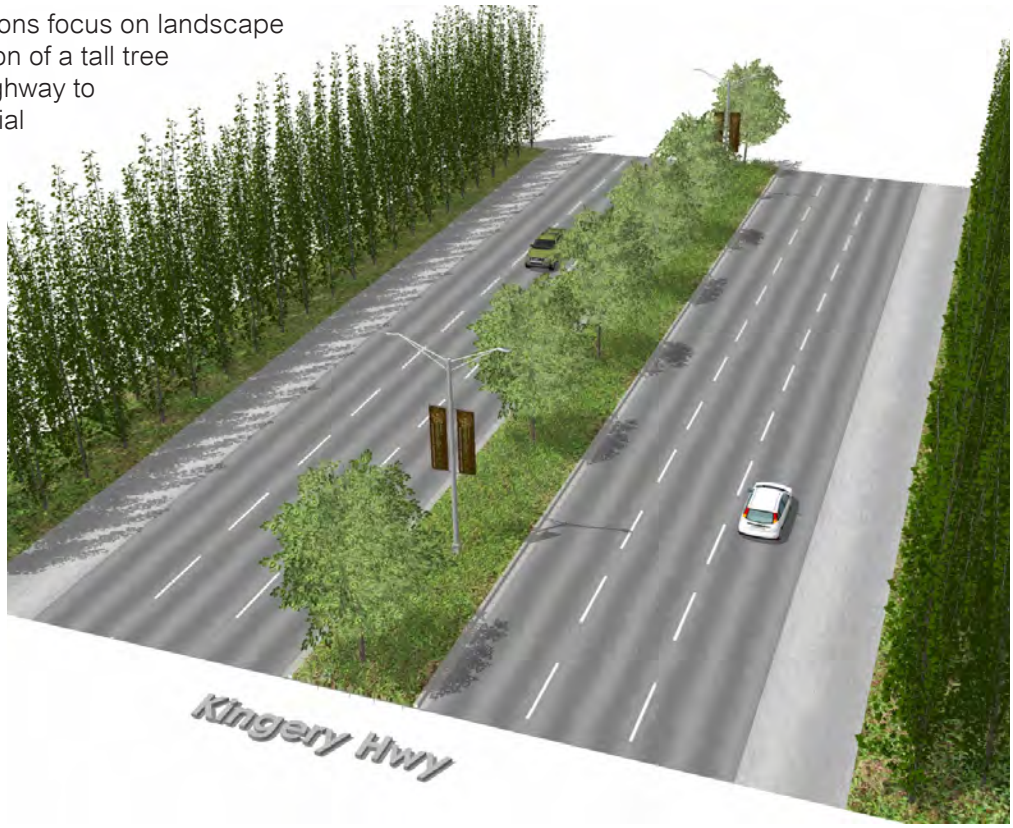
EXISTING SECTION AND PLAN: ILLINOIS ROUTE 83



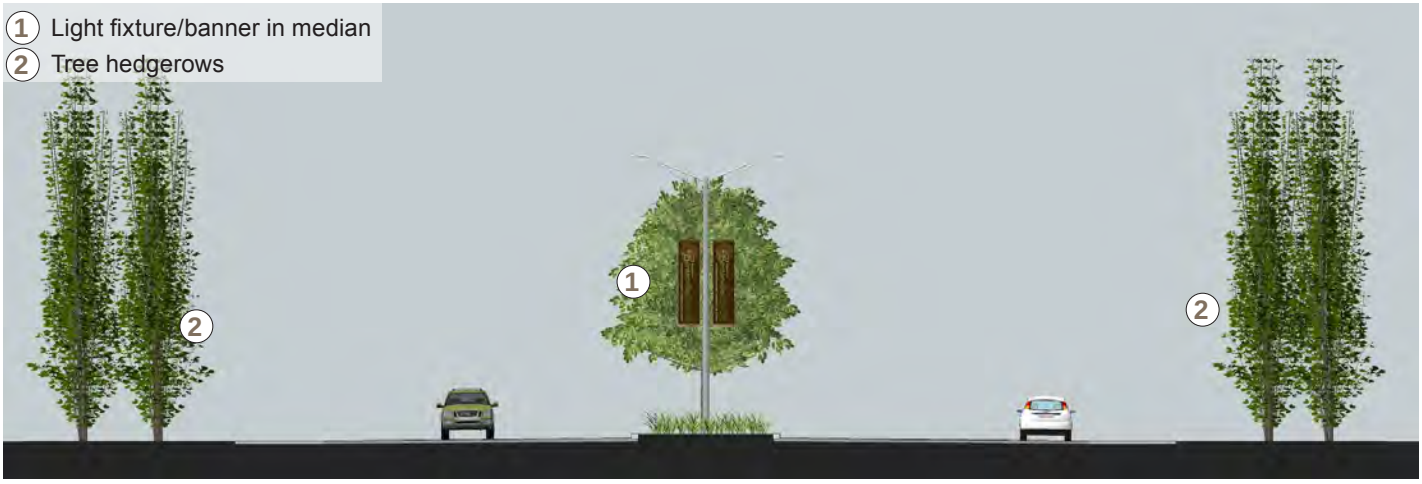
ILLINOIS ROUTE 83

Recommended Improvements

Along IL Route 83, recommendations focus on landscape improvements, including installation of a tall tree hedgerow on both sides of the highway to protect the residential and industrial areas from high speed traffic and noise. The trees would not be installed in front of existing businesses. Recommended improvements to the median include shade trees within a planted median, as well as installation of standard street lights with banners to enhance the identity of the corridor. The Village should look for partnership opportunities with the City of Wood Dale for any future improvements on IL Route 83.



RECOMMENDED STREETSCAPE ELEMENTS



ILLINOIS ROUTE 83

Recommended Streetscape Improvements by Level:

Level 1: Landscape Improvements

- Tall tree hedgerow on east and west sides
- Shade trees with median planting

Level 2: Install standard street light in median

Level 3: Improve light poles with banners to promote Village identity

Levels 1 - 2

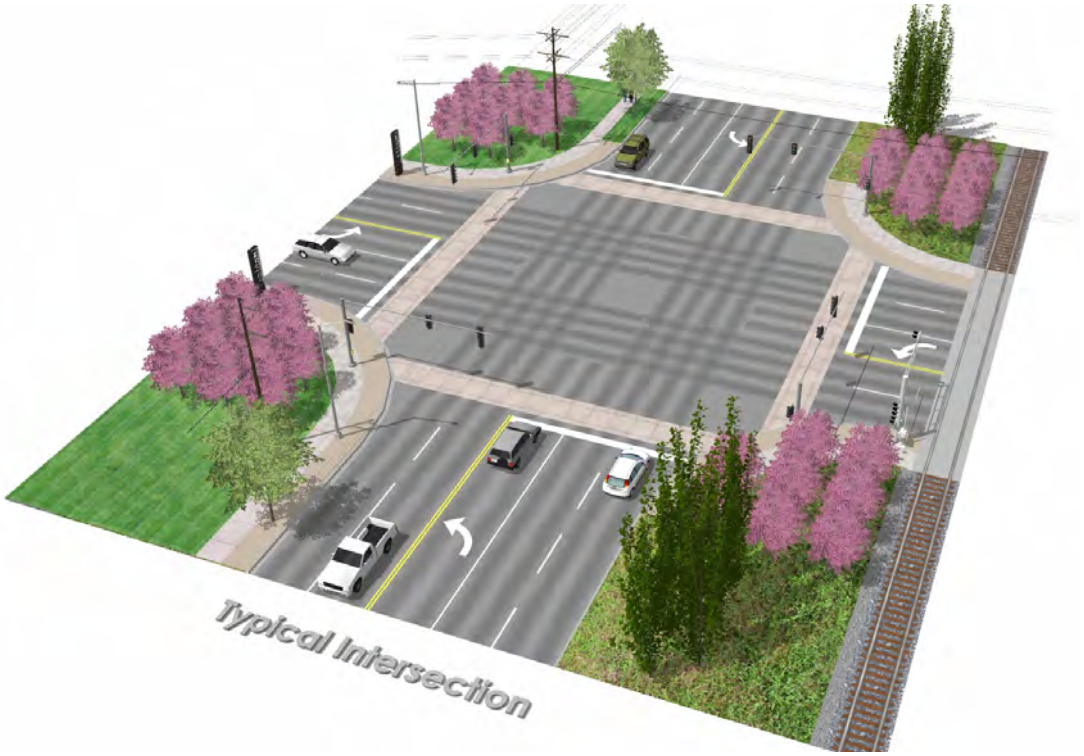
Level 3

Recommended Intersection Improvements

Intersection improvements are recommended for five key intersections in Bensenville: Foster Avenue and IL Route 83, Foster Avenue and York Road, Irving Park Road and York Road, Green Street and York Road, and Green Street and County Line Road. The proposed streetscape includes accent tree groves at corners, within the public way as well as recommended as a component of private landscaping where appropriate (to screen auto uses, for example). Enhanced pedestrian crossings and monuments are also recommended where appropriate.

Major Intersection

View east at intersection of York Road and Irving Park Road.



MAJOR INTERSECTIONS

Recommended Streetscape Improvements by Level:

Level 1: Accent tree grove at intersection corners where possible

Level 2: Install color concrete pedestrian crossings to connect sidewalks, where present

Level 3: Install monuments at entries to key corridors described above

Levels 1 - 2

Level 3

Sustainable Stormwater Strategies

As Bensenville continues to redevelop, there are many opportunities for incorporating multi-functional landscapes including sustainable stormwater strategies. Impermeable surfaces such as roads and parking lots collect grease, oil, antifreeze, and other vehicle leakage; heavy metals from brake dust; and other pollutants, all of which are flushed into waterways by rain and melting snow. Increasing permeable surfaces and using biofiltration and bioretention systems are low-cost methods for treating and cleansing stormwater runoff, which reduce the quantity and increase the quality of stormwater runoff, thereby decreasing overall impacts to larger basins and waterways downstream. Our experience shows that many grants are available for stormwater improvements, such as the Illinois Green Infrastructure Grant (IGIG).

Refer to the University of Illinois Extension web site for additional information:

http://urbanext.illinois.edu/lcr/landscaping.cfm

Urban Edge Example
Irving Park Road | Green Street | Downtown

Parkway Edge Example
York Road | Foster Avenue | IL Route 83

IRVING PARK ROAD BIOFILTRATION EXAMPLE

Irving Park Road Tree Grates

Irving Park Road Urban Biofiltration Curb Cuts

Plant Typologies

The Village of Bensenville has adopted an approved plant list that was developed by the State of Illinois Emerald Ash Borer Reforestation Committee. The approved plant list, the current version of which is given on the following pages, can be found online at the Illinois Department of Agriculture. The plant list is periodically updated, so the web site should be referred to for ongoing implementation projects.

The plant list includes species recommended for specific planting conditions that are found throughout this report. Planting sites noted in the plant list that correspond with recommendations addressed in this document include City Parkway, Sidewalk Cut Out and Under Wire conditions. The plant list also includes other valuable information on species that will affect plant selection such as salt tolerance, hardiness, and availability.

Green Street: Tree hedgerow and Under Wire planting conditions.

TREE HEDGEROW PLANTING

The hedgerow is a planting typology that is evocative of the agricultural windbreaks historically and currently used for Illinois farms. In this instance, the tree hedgerow planting recommended for Green Street, York Road, and IL Route 83 is intended to not only be a noise and visual buffer from the airport, the future highway, and the existing arterials themselves, but also to give the Village of Bensenville a new low-cost identity element.

The implementation strategy for the hedgerow is to plant a double row of trees with fast growing Lombardy Poplars along the street and Columnar Oak trees behind. The intent of this strategy is to create immediate impact with the fast growing Lombardy Poplars. After 10 years when the poplars have started to decline, the poplars can be removed to reveal a mature hedgerow of columnar oaks.

Columnar English Oak

Lombardy Poplar

Increasing Tree Diversity in the Urban Landscape - Northern Illinois

Revised 11/27/07

List Premises:

- **For the purposes of overall diversity some commonly used trees have been omitted from this list of recomendations (ie. Honeylocust, Autumn Blaze Maple). This does not mean that they cannot be used, rather that the committee felt that their inclusion may have influenced reforestation efforts in such a manner as to create future pest and diversity problems due to current high populations.**
- When the species only is listed, then all cultivars and the species are recommended.
- When the species and cultivars are listed, then only the species and the selected cultivars are recommended.
- Northern Illinois is the region north of I-80. USDA Plant hardiness zones 4b(northwestern Illinois), 5a , and 5b(northeastern Illionis).
- Central Illinois is from I-80 on the north to I-70 on the south. USDA Plant hardiness zones 5a-5b.
- Southern Illinois the region south of I-70. USDA Plant hardiness zones 5b-6b.
- It is the recommendation of this committee that those trees provided to private property owners match the size being planted by the local government.
- The committee recommends that trees be purchased within 200 miles radius of their planting location.
- Trees may be purchased as bare-root, balled & burlapped (B&B), grow bag or container grown. Size requirements, availability and planting time restraints may be used to determine what harvesting method is acceptable for individual planting projects.
- Private Property designation includes residential, corporate, parks, golf courses, cemeteries or any other planting site other than the public right-of-way between the street curb and the adjacent private property line.
- City Parkway designation refers to the public right-of-way. The public right of way is measured from private property line to private property line and includes but is not limited to street surface, sidewalks, medians, plaza's, traffic circles, curbs and parkways or boulevards.
- All trees listed under the City Parkway designation are to be single stem (tree form).

Tree Species for Northern Illinois				Planting Site				Other				
Common Name	Scientific Name			City parkway	Sidewalk cut out	Private property	Under wires	Salt tolerant	Spring planting best	Availability	Hardiness	Ease of transplant
	Genus	Species	Cultivar									
White Fir	*Abies*	*concolor*				●				AV	GD	GD
Hedge Maple	*Acer*	*campestre*		●		●	●	●	●	AV	GD	GD
Miyabe Maple	*Acer*	*miyabei*		●		●	●			GD	GD	GD
State Street® Miyabe Maple	*Acer*	*miyabei*	Morton'	●		●	●			GD	GD	GD
Black Maple	*Acer*	*nigrum*		●		●				LTD	AV	AV
Sycamore Maple	*Acer*	*pseudoplatanus*		●	●	●		●	●	NA	AV-PR	AV
Fall Fiesta Sugar Maple	*Acer*	*saccharum*	Fall Fiesta			●				AV	GD	AV
Green Mountain® Sugar Maple	*Acer*	*saccharum*	'PNI 0285'	●		●				AV	AV	AV
Skinner's Cut-leaved Silver Maple	*Acer*	*saccharinum*	Skinneri'	●		●				NA	GD	GD
Silver Queen Silver Maple	*Acer*	*saccharinum*	Silver Queen	●		●				NA	GD	GD
Norwegian Sunset® Maple	*Acer*		Norwegian Sunset®	●		●	●			LTD	GD	GD
Pacific Sunset® Maple	*Acer*		Pacific Sunset®	●		●	●			AV	GD	GD
Autumn Fantasy Maple	*Acer*	x *freemanii*	Autumn Fantasy'	●		●				GD	GD	GD
Marmo Maple	*Acer*	x *freemanii*	'Marmo'	●		●				GD	GD	GD
Sienna Maple	*Acer*	x *freemanii*	'Sienna'	●		●	●			LTD	GD	GD
Ohio Buckeye	*Aesculus*	*glabra*		●	●	●				AV	GD	AV
Baumann Horsechestnut	*Aesculus*	*hippocastanum*	Baumannii'	●	●	●		●		LTD	GD	AV
Yellow Buckeye	*Aesculus*	*octandra*		●		●			●	LTD	GD	AV
European Black Alder **	*Alnus*	*glutinosa*				●				GD	GD	GD
White Alder **	*Alnus*	*incana*				●				LTD	GD	GD
Apple Serviceberry	*Amelanchier*	× *grandiflora*		●		●	●			LTD	GD	GD
Allegheny serviceberry	*Amelanchier*	*laevis*		●		●	●			LTD	GD	GD
River Birch	*Betula*	*nigra*		●		●			●	GD	GD	AV
European Hornbeam	*Carpinus*	*betulus*		●		●			●	AV	GD	DIF
American Hornbeam	*Carpinus*	*caroliniana*		●		●	●		●	AV	GD	DIF
Bitternut Hickory	*Carya*	*cordiformis*				●			●	NA	AV-PR	DIF
Shellbark Hickory	*Carya*	*laciniosa*				●			●	NA	AV-PR	DIF
Pignut Hickory	*Carya*	*glabra*				●			●	NA	AV-PR	DIF
Mockernut Hickory	*Carya*	*tomentosa*				●			●	NA	AV-PR	DIF
Shagbark Hickory	*Carya*	*ovata*				●	.		●	LTD	AV	DIF

Tree Species for Northern Illinois				Planting Site				Other				
Common Name	Scientific Name			City parkway	Sidewalk cut out	Private property	Under wires	Salt tolerant	Spring planting best	Availability	Hardiness	Ease of transplant
	Genus	Species	Cultivar									
Chinese Catalpa	*Catalpa*	*ovata*		●		●				VLTD	AV	GD
Northern Catalpa	*Catalpa*	*speciosa*		●	●	●		●		GD	GD	GD
Chicagoland Hackberry	*Celtis*	*occidentalis*	'Chicagoland'	●	●	●				LTD	GD	GD
Hackberry	*Celtis*	*occidentalis*		●	●	●				GD	GD	GD
Windy City Hackberry	*Celtis*	*occidentalis*	'Windy City'	●	●	●				LTD	GD	GD
Katsuratree	*Cercidiphyllum*	*japonicum*				●			●	GD	GD	DIF
Eastern Redbud	*Cercis*	*canadensis*		●		●	●		●	GD	GD	AV
Whitebud	*Cercis*	*canadensis*	'Alba'	●		●	●		●	VLTD	AV-PR	AV
Pagoda Dogwood	*Cornus*	*alternifolia*				●	●		●	AV	AV	AV
Corneliancherry Dogwood	*Cornus*	*mas*		●		●	●		●	GD	GD	GD
Turkish Hazelnut	*Corylus*	*colurna*		●		●			●	AV	AV	AV
Thornless Cockspur Hawthorn	*Crataegus*	*crusgalli*	var. inermis	●		●	●		●	GD	GD	GD
Washington Hawthorn	*Crataegus*	*phaenopyrum*				●	●		●	GD	GD	GD
Winter King Green Hawthorn	*Crataegus*	*viridis*	Winter King'			●	●		●	GD	GD	GD
Hardy Rubber Tree	*Eucommia*	*ulmoides*				●				VLTD	AV	GD
American Beech	*Fagus*	*grandifolia*				●			●	LTD	GD	DIF
Copper Beech	*Fagus*	*sylvatica*	'Cuprea')			●			●	AV	GD	DIF
Fern-leaved European Beech	*Fagus*	*sylvatica*	Asplenifolia'			●			●	AV	GD	DIF
Ginkgo, Male only	*Ginkgo*	*biloba*		●	●	●				AV	GD	GD
Magyar Ginkgo	*Ginkgo*	*biloba*	'Magyar'	●	●	●				LTD	GD	GD
Princeton Sentry Ginkgo	*Ginkgo*	*biloba*	Princeton Sentry'	●	●	●				LTD	GD	GD
Kentucky Coffeetree	*Gymnocladus*	*dioicus*		●	●	●		●		GD	GD	GD
Black Walnut	*Juglans*	*nigra*				●		●	●	LTD	AV	DIF
Canaert Eastern Redcedar	*Juniperus*	*virginiana*	Canaertii'			●		●	●	AV	GD	GD
Eastern Redcedar	*Juniperus*	*virginiana*				●		●	●	AV	GD	GD
Chinese Juniper	*Juniperus*	*chinensis*	Upright cultivers			●		●	●	AV	GD	GD
Moraine Sweetgum	*Liquidambar*	*styraciflua*	'Moraine'	●		●			●	LTD	AV-PR	DIF
Tuliptree	*Liriodendron*	*tulipifera*				●			●	LTD	AV-PR	DIF
Korean Crabapple	*Malus*	*baccata*	var. *jackii*			●	●		●	GD	GD	GD
Beverly Crabapple	*Malus*		'Beverly'			●	●		●	GD	GD	GD
Cardinal Crabapple	*Malus*		'Cardinal'			●	●		●	GD	GD	GD
Purple Prince Crabapple	*Malus*		Purple Prince			●	●			GD	GD	GD
Red Jewel Crabapple	*Malus*		'Jewelcole'			●	●		●	GD	GD	GD
Red Peacock Crabapple	*Malus*		Red Peacock'			●	●		●	GD	GD	GD
Sargent's Crabapple	*Malus*	sargentii				●	●		●	GD	GD	GD
Golden Raindrops® Crabapple	*Malus*	*transitoria*	'Schmidtcutleaf'			●	●		●	GD	GD	GD
Zumi Crabapple	*Malus*	x *zumi*				●	●		●	GD	GD	GD
Dawn Redwood	*Metasequoia*	*glyptostroboides*		●	●	●			●	VLTD	AV	AV
Black Gum, Tupelo	*Nyssa*	*sylvatica*				●			●	LTD	AV-PR	AV
Ironwood	*Ostrya*	*virigniana*		●		●			●	AV	GD	GD
Black Hills Spruce	*Picea*	*glauca*	'Densata'			●		●		GD	GD	GD
Serbian Spruce	*Picea*	*omorika*				●		●		GD	GD	GD
Blue Spruce	*Picea*	*pungens*				●				GD	GD	GD
London Plane Tree	*Platanus*	x *acerifolia*	Exclamation	●	●	●		●	●	LTD	AV	GD
Robusta Poplar	*Populus*	x *euramerica*	'Robusta'	●		●		●	●	LTD	AV	GD
Siouxland Poplar	*Populus*	*deltoides*	'Siouxland'	●		●		●	●	LTD	AV	GD
Quaking Aspen	*Populus*	*tremuloides*				●		●	●	AV	AV	GD
Sargent Cherry	*Prunus*	*sargentii*		●	●	●			●	VLTD	AV	GD
Canada Red Choke Cherry	*Prunus*	*virginiana*	'Canada Red'	●	●	●				AV	AV	GD
White Oak	*Quercus*	*alba*				●			●	LTD	GD	DIF
Crimson Spire™ Oak	*Quercus*	*alba x robur*	Crimschmidt'	●	●	●			●	VLTD	GD	AV
Swamp White Oak	*Quercus*	*bicolor*		●	●	●			●	GD	GD	GD
Hill's Oak	*Quercus*	*ellipsoidalis*		●		●			●	AV	AV	GD
Shingle Oak	*Quercus*	*imbricaria*		●		●			●	AV	AV	AV
Bur Oak	*Quercus*	*macrocarpa*		●		●			●	GD	AV	DIF
Chinkapin Oak	*Quercus*	*muehlenbergii*		●		●			●	AV	GD	AV
English Oak	*Quercus*	*robur*		●	●	●		●	●	VLTD	GD	AV
Regal Prince English Oak	*Quercus*	*robur*	Regal Prince	●	●	●			●	GD	GD	AV
Skymaster® English Oak	*Quercus*	*robur*	Pyramich'	●	●	●			●	VLTD	GD	AV
Heritage® Macdaniel's Oak	*Quercus*	x *macdanielii*	Clemons'	●	●	●		●	●	VLTD	GD	AV

Tree Species for Northern Illinois				Planting Site				Other				
Common Name	Scientific Name			City parkway	Sidewalk cut out	Private property	Under wires	Salt tolerant	Spring planting best	Availability	Hardiness	Ease of transplant
	Genus	Species	Cultivar									
Shumard's Oak	*Quercus*	*shumardii*		●		●			●	LTD	GD	AV
Chicago Blues Black Locust	*Robinia*	*pseudoacacia*	Chicago Blues'	●	●	●		●	●	LTD	AV	AV
China Snow® Peking Lilac	*Syringa*	*pekinensis*	Morton'	●		●	●		●	GD	GD	GD
Ivory Silk Japanese Tree Lilac	*Syringa*	*reticulata ssp. reticulata*	'Ivory Silk'	●	●	●	●	●		GD	GD	GD
Summer Snow Japanese Tree lilac	*Syringa*	*reticulata ssp. reticulata*	'Summer Snow'	●	●	●	●	●		LTD	GD	GD
Baldcypress	*Taxodium*	*distichum*		●	●	●		●	●	GD	GD	GD
Shawnee Brave	*Taxodium*	*distichum*	Shawnee Brave	●	●	●		●	●	GD	GD	GD
American Linden	*Tilia*	*americana*		●		●				AV	GD	GD
Boulevard Linden	*Tilia*	*americana*	'Boulevard'	●		●				LTD	GD	GD
Legend™ Linden	*Tilia*	*americana*	Wandell'	●		●				LTD	GD	GD
Redmond Linden	*Tilia*	*americana*	Redmond'	●		●				GD	GD	GD
American Sentry Linden	*Tilia*	*americana*	American Sentry	●		●				GD	GD	GD
Bigleaf Linden	*Tilia*	*platyphyllos*		●		●				LTD	GD	GD
Green Mountain® Silver Linden	*Tilia*	*tomentosa*	PNI 6051	●		●				VLTD	GD	GD
Sterling Silver™ Silver Linden	*Tilia*	*tomentosa*	Sterling'	●		●				LTD	GD	GD
Accolade Elm	*Ulmus*		Accolade	●	●	●				AV	GD	GD
Prospector Wilson's Elm	*Ulmus*	*wilsoniana*	Prospector'	●	●	●				AV	GD	GD
Commendation Elm	*Ulmus*	*carpinifolia*	Commendation	●	●	●				AV	GD	GD
Regal Elm	*Ulmus*	*carpinifolia*	Regal'	●	●	●				AV	GD	GD
Triumph™ Elm	*Ulmus*		Morton Glossy'	●	●	●				GD	GD	GD
Village Green Japanese Zelkova	*Zelkova*	*serrata*	'Village Green'	●		●		●	●	LTD	AV	AV

**** These species may be invasive and should not be planted in or adjacent to natural areas.**

List Key:

City Parkway	The city parkway refers to a predominantly, continuous soil planting area within the public right-of-way, typically adjacent to the curb line of a street.
Sidewalk Cut-out	A sidewalk cut-out refers to an opening in a sidewalk completely surrounded by concrete, asphalt, or pavers.
Private Property	Private property includes residential, corporate, parks, golf courses, cemeteries, or any other landscaped planting site not within the public right-of-way.
Under Wires	Smaller trees better suited for planting under utility wires.
Salt Tolerant	Salt tolerant trees are recommended for use in areas which are subject to road salt.
Spring Planting Best	Trees which may require spring planting or at least to be nursery dug in the spring to improve establishment and survivability rates.
Availability	
GD =	Good: commonly available in most nurseries
AV =	Average: available in many nurseries
LTD =	Limited: available in some nurseries in limited quantities
VLTD =	Very Limited: somewhat difficult to find in nurseries
NA =	Not Available: currently no known growers
Hardiness	
EX =	Excellent: good overall survivability
GD =	Good: performs well
AV =	Average: grows within the area
AV-PR=	Average to Poor: may grow within protected sites but otherwise not survive in exposed sites.
Ease of Transplant	
GD =	Good: Easily transplantable
AV =	Average: Transplants reasonably well
DIF=	Difficult: Requires special consideration for successful transplant

The document was developed by the State of Illinois Emerald Ash Borer Reforestation Committee, a sub-committee of the Governor's Emerald Ash Borer Management & Science Advisory Panel .

Source: http://www.agr.state.il.us/eab/PDFs_for_web/Reforestation/Northern_IL.pdf

Renewable Energy Policy Guidance

The FAA Compatibility Plan focuses in part on geothermal and district heating / cooling ideas in part because power demand continues to grow (about 2% annually) linked with our technology-based economy. Open space will play a significant role for our energy future in response to this situation, particularly through emerging geo-exchange technologies. And while traditional revenue streams and grant opportunities remain thin, there continues to be active federal support for policies that encourage sustainability, are focused on renewable energy, and provide enhanced energy security.

As land use population densities increase for transportation commute efficiency, cost savings and quality of life. More and more demand for urban space leaves less and less open space available and the value of open space increases in response to these market pressures and evolving new development. The peak demand for energy in these urban settings is also increasing with population density growth.

In response to this demand, existing power grid service is becoming more important and valuable. The power industry response to this dilemma is the coined term "SMART Grid". This concept involves understanding our power demand end uses and prioritizing them or staging them to share the available grid capacity. Where grid capacity must increase to meet demand and also connect to new renewable energy resources, demand pricing will be instituted to practical peak power demand so that grid investments are targeted to the need. Peak demand power use will pay premium prices for that continued service and the associated investments.

Energy efficiency strategies that use off peak power to provide HVAC comfort and functionality during on peak power use will become widely adopted. These renewable energy strategies involve power savings and energy storage versus power generation from renewable wind and solar generation. Geo-exchange of energy with the environment including geology and water resources is currently growing at about 30% annually in the US in response to this energy savings strategy. The geo-exchange industry growth is even faster and greater in Europe. Geo-exchange performance is measured in megawatts and reduction of heating fuel use associated combustion and pollution. It also reduces grid line losses that would otherwise occur if power is delivered to the end user particularly during peak demand. The open space land uses that are most commonly available in urban settings near power end users include:

- parks, golf courses, and drainage easements
- schools and athletic fields
- office and institutional campuses
- transportation corridors and underground utilities

These land uses have expansive underground geology and groundwater resources. In some cases significant water resources including lakes, ponds and streams are also available. The stable seasonal temperature in these resources, as compared to ambient air, makes them a valuable resource for geo-exchange. The value of energy in these resources is exploited by the simple refrigeration cycle and heat transfer leveraged by a heat pump. The USEPA and USDOE both recognize geo-exchange heat pump technology as the leading technology for renewable energy and overall energy savings in the US economy behind efficient lighting.

The key to the geo-exchange technology deployment involves matching the natural resource capabilities with energy end user demand so that energy savings may be exploited by the property owner or a nearby off site end user. Along with the deployment, we must also protect the ecological resources from damage. There are also opportunities to improve ecological conditions in some geologic and water resources with energy circulation. Storm water management also represents a compatible use with geo-exchange. Geologic geo-exchange deployment is an "out of sight out of mind" situation that can be essentially invisible to current and future land uses. For pure open space with underlying geologic media, geo-exchange capacity is commonly developed to yield up to 250 to 300 tons/ac at the most intensive level and may grade less intensive to produce more efficient geo-exchange system designs to meet HVAC demand with a given amount of land available.

The value proposition for geo-exchange is predictably about 25 to 50% energy savings for HVAC applications in buildings and often an even higher percentage savings for shared energy uses related to industrial processes. Higher economies of scale also improve performance. With 40% of the world's energy consumed by buildings, the impact of geo-exchange to energy resources and energy supply around the world may range from a 10 to 20% overall savings. This savings rate easily exceeds the recent discovery rate of proven energy resources worldwide. This situation raises a compelling argument that our energy end uses should be made practically efficient using geo-exchange systems and then energy distribution and generation systems should be right –sized to meet power and fuel demands where geo-exchange coupling to the earth or water is practiced.

As economic conditions improve, the Village needs to consider implementation of geothermal and /or district heating and cooling strategies that take advantage of the following potential assets:

- Stormwater Retention Ponds
- Village owned emergency wells
- O'Hare International Airport Stormwater Flows
- Geo-exchange with the ground or with ground water
- Work with IDOT and Tollway to recognize infrastructure opportunity to build geothermal capacity in the right of way for EOWA Route.

The clear goal in putting these assets to better use is to either reduce village operating costs, or to resell surplus energy to the local market, generating revenue. Factored in with geoexchange opportunities is the consideration of a district heating and cooling strategy for the Northern Business District. While expensive, the clear premise of such a strategy would be to otherwise lower occupancy costs for companies who chose to locate in the park.

BENSENVILLE
GATEWAY TO OPPORTUNITY

VILLAGE OF BENSENVILLE

MARKETING & COMMUNICATIONS STRATEGY

DEVELOPED BY: GRISKO

February 2013

GRISKO

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EXECUTIVE SUMMARY

Bensenville has reached a pivotal time in its history as the Village administration seeks to shift the community's focus away from the past and onto a bright future characterized by increased economic and community development. The Village has taken several key steps to strengthen its foothold and best position itself to grow and prosper in the years to come.

The Village recently adopted a fresh, new brand identity, including a modern logo and taglines focusing on a key central theme of opportunity. The overall objective of this rebranding effort was to revitalize Bensenville's image and add momentum to the Village's vision to elevate its profile as a great place to live and do business, as expressed in the administration's strategic plan.

Additionally, the Comprehensive Economic Development Study, conducted in partnership with AECOM, offers a roadmap for the Village to leverage its unique proximity to major transportation hubs, including O'Hare International Airport, and embrace large-scale infrastructure developments on the horizon.

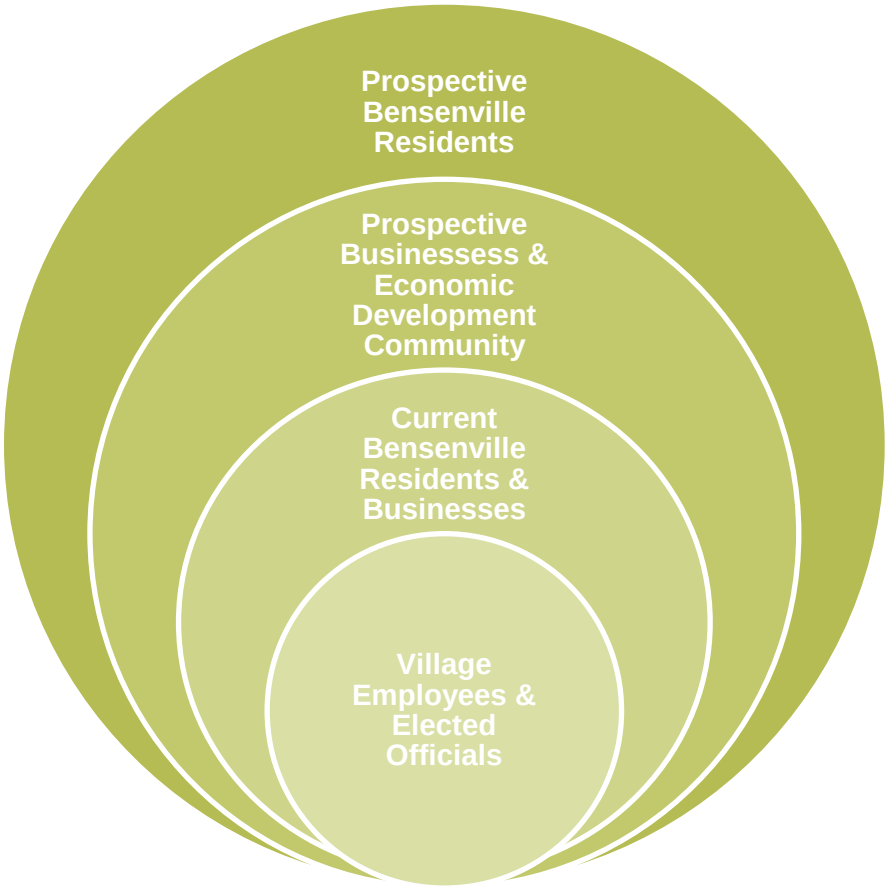
The Village of Bensenville is now uniquely positioned to raise its profile as a regional hub for commerce and a prime location for economic development. Moreover, Bensenville is equipped to attract new residents and families from neighboring communities and across the region who are seeking affordable housing, good schools and community resources to enrich their lives.

This strategy offers a core set of recommendations for communications activities to be implemented over the course of the coming 12 months, starting with the rollout of the new Bensenville brand. It also includes ongoing guidelines and best practices that will help the Village reshape perceptions about Bensenville over time and ultimately, raise the Village's profile with businesses and the public as an exceptionally attractive environment for economic development, job creation and business investment.

AUDIENCE OVERVIEW

TARGET AUDIENCE SEGMENTS

As the foundation of the rebranding process, we identified key audiences with whom it will be vital to leverage Bensenville's new identity in order to support the Village's community and economic development objectives. Target audiences were segmented into the following categories: Village employees and elected officials, current residents and businesses in Bensenville, prospective businesses and residents. The marketing and communications initiatives and campaigns outlined in this strategy are therefore aimed at reaching and facilitating engagement with these particular groups.



At the core of the Village's communications efforts are the Village employees and elected officials who will serve as the first and primary ambassadors of Bensenville's new brand. Their buy-in is necessary to help to build enthusiasm and spread the word to Bensenville's current residents and businesses. Once a foundation of community-wide awareness and excitement around the brand is in place, the Village can effectively strengthen its longer-term marketing efforts aimed at attracting new businesses and residents, and promoting Bensenville among the broader public as a great place to live and do business.

12-MONTH MARKETING STRATEGY: BENSENVILLE BRAND ROLLOUT

PHASE I – MONTHS 1-6

Gateway to Opportunity

A phased rollout of the new brand identity should be implemented in order to ensure a smooth and seamless introduction of the new logo and taglines to the Village's primary brand ambassadors: Village employees/administration and Bensenville residents and businesses.

Internally, the Village administration and employees must fully embrace the brand prior to its public launch. Phase One will be initiated by an internal introduction of the brand and conclude with an official public unveiling and awareness campaigns aimed at building buzz in the community.

This phased approach will help to effectively maximize the brand's internal and external reception in a positive way. The following high-level goals will help the Village to best execute the brand rollout process:

INTERNAL LAUNCH	EXTERNAL LAUNCH
INTRODUCE BRAND TO VILLAGE STAFF	PUBLIC INTRODUCTION
ENSURE BUY-IN OF BRAND MESSAGE	GENERATE EXCITEMENT
FULL TRANSITION FROM OLD BRANDING	ADD MOMENTUM TO STRATEGIC

GOALS

INTERNAL BRAND LAUNCH RECOMMENDATIONS

Upon launching a new brand, there is no more important audience than the internal employees whose buy-in and support is vital to the brand's success. A thoughtful introduction of the new brand to municipal employees and administrators will lay the foundation for a successful external rollout to Bensenville residents and businesses.

The following are recommended steps the Village communications team can take to effectively disseminate the new brand's values, message and vision to everyone from the Village leadership to each and every municipal employee across all departments.

1.) *Village Leadership/Administration Brand Introduction*

ADMINISTRATIVE ASSEMBLY

Organizing an in-person administrative assembly will provide an opportunity for the Village's communications team to present the Bensenville brand and its message and bring the brand vision into focus for Village leadership. The following steps will help maximize the effectiveness of the assembly.

- Allow a question and answer session to ensure the brand message is clear and there are no doubts among the Village administrators about what the new brand represents.
- Preview the new brand's marketing toolkit and review the importance of following the Village of Bensenville graphic standards so the Village is represented accurately and consistently.
- Explain usage of Village vs. departmental logo/tagline: Departmental logos are appropriate for individual e-signatures, departmental premium items (such as t-shirts, bumper stickers), departmental vehicles and stationery that is used to communicate department-specific efforts and initiatives. General Village and administration communications should feature the primary logo and "Gateway to Opportunity" tagline.
- Encourage Village leadership to act as brand ambassadors and spokespeople; let them know that the Village's communications staff is a resource and available to answer questions that may arise regarding the new brand and its usage.

2.) *Employee-Wide Brand Introduction*

VILLAGE PRESIDENT MESSAGE

As an introduction, the Village President should author an internal memo for distribution to all Bensenville municipal employees. The memo will initiate the internal brand rollout and should include, but is not limited to, the following:

- Introduction to new logo and taglines
- Vision behind each tagline
- Breakdown of the logo's look and feel
- Core messages

DISTRIBUTE TOOLKIT MATERIALS

The Village will consistently disseminate materials to all Village departments and offer instructions on how to phase out the previous logo(s). Materials should include, but are not limited to:

- Distribution of graphic standards and supporting information that explains the importance of representing Bensenville accurately across all platforms.
- Employee business cards and Village branded letterhead, PowerPoint template, envelopes and instruction for email signature setup.
- Ensure toolkit materials are accessible in a central location and that employees know they can contact the communications staff with questions or for support.

BRAND IDENTITY PALM CARD OR FACT SHEET

Produce small, Bensenville palm cards or a one-pager fact sheet that can be distributed to all departments and Village employees to keep at their workstations. Palm cards will offer brand core messaging, mission and logo/tagline vision so that employees are familiar with the purpose and vision of the new brand and able to communicate that with their external contacts.

In order to get maximum use out of these items, Bensenville palm cards or fact sheets can also be made available to the public during the external rollout and distributed at Village offices.

EMPLOYEE SURVEY

In the months following the initial internal brand rollout, the Village communications team may wish to issue an internal survey to all Bensenville employees to better understand first impressions of the Village's new identity and gauge the effectiveness of efforts thus far to encourage their buy-in. Questions should ultimately determine what the new brand means to the staff and how it is being received, and uncover any questions or uncertainties staff may have about the new logo.

The insights uncovered through the survey results can be used to determine if the Village is prepared to launch the brand publicly. If additional messaging and education is necessary internally, appropriate measures should be taken prior to public launch. Online vendors such as Survey Monkey provide inexpensive, user-friendly survey tools that can be tailored to meet the Village's needs.

EXTERNAL BRAND LAUNCH RECOMMENDATIONS

Once the Village has introduced the brand internally to municipal employees, it will have the foundation to execute a more visible external brand announcement for the public – specifically, Bensenville's current residents and the local business community. This effort should include campaigns that reach Bensenville's audiences across a variety of touch-points, including events, traditional media, social media and promotions.

OFFICIAL BRAND ANNOUNCEMENT

The village will issue a press release to officially introduce the new brand, taglines and vision. This represents the official "unveiling" of the Bensenville brand and should incorporate key messages and a statement from the Village President, which conveys the brand's message of opportunity.

The announcement should offer information on why this rebranding matters to Bensenville's target audience. For example, the press release should reinforce the Village's motive to spur economic development and opportunities for Bensenville residents and businesses.

It will also be important to identify media outlets that will broadcast the announcement to Bensenville's target audience. Spending time targeting these outlets will increase opportunity and reach.

PUBLIC EVENT

Bensenville should host a public event/press conference to coincide with the official brand announcement. An invitation to the public event should be included in the announcement/press release and local media should be encouraged to attend.

In order to generate buzz leading up to the event and offer media a photo opportunity, the Village should include a visual element at the event that speaks to the occasion, such as a newly branded way-finder or welcome sign, and conduct a physical "unveiling."

SOCIAL MEDIA

Social media should be integrated as a marketing tool to enhance all efforts to get residents excited about the brand. Opportunities to engage users could include:

- Photo sharing of brand – Brand unveiling, way-finders & welcome sign installation, city vehicles & buildings, events, etc.
- Live Facebook/Twitter updates from public event(s)
- Campaigns to generate excitement surrounding promotions (see promotional opportunities below)

Creative Opportunities to Build Brand Awareness and Buzz

Promotional opportunities and public events are a great way to spread the word about the "new" Bensenville and generate excitement among the community. The following are creative ideas to get the public involved in Bensenville's rebranding.

CHICAGO STEEL CHUCK-A-PUCK

At a Chicago Steel hockey game, game goers would pay a nominal amount to play Chuck-A-Puck. They would receive a puck (often a foam puck) with a unique number written on it. In order to identify each participant, the attendees' name and assigned puck number would be recorded.

The objective of the game is to throw your puck onto the ice and get as close to the center ice dot as possible. For this particular event, the Village of Bensenville's new logo would be printed on a mat and placed at center ice. Whoever hits/gets closest to the Bensenville logo will win half the proceeds. To initiate the game, the Mayor would say a few words about Bensenville's new logo and then instruct attendees to chuck their puck.

STUDENT DRAWING CONTEST

A "What I love about Bensenville" drawing contest can be announced at local schools. For the drawing project, every student would be given construction paper branded with the new Bensenville logo. Students would be asked to create a picture of their favorite things about living in Bensenville. Village officials would work with local businesses to have the student drawings displayed in store and office windows and appointed judges can pick winners. It is expected that businesses would see increased foot traffic from people coming to view the pictures and the new Village logo would gain additional exposure in the community as a result.

PHOTO SUBMISSION

Village residents of all ages would be asked to submit their favorite photos of Bensenville by email or post mail. Photos would be collected fora designated period of time. Bensenville officials would then pick the winning photos that best represent Bensenville's unique character and showcase its evolution over time. The Village can take these photos and either make a collage or create a "Gateway" arch timeline. The collage or arch timeline should also incorporate the new Bensenville logo. Ideally, the photo arch timeline would be displayed at the entrance of Village Hall, the library or serve as a symbolic "Gateway" to community events, such as Music in the Park.

12-MONTH MARKETING STRATEGY: ECONOMIC DEVELOPMENT MARKETING

PHASE II – MONTHS 7-12

Where Opportunity Takes Off

Once the new brand has successfully been introduced to Bensenville's primary brand ambassadors and audiences within the Village, including municipal employees, local residents and businesses, we recommend that the Village makes a strong push to leverage its new identity in order to add momentum to the administration's economic development vision.

In order for the Village to achieve its goal of attracting new residents and young families to Bensenville, it's critical the Village first implement a powerful marketing program aimed at attracting new businesses to set up operations and create jobs in Bensenville. By increasingly driving business to Bensenville, the Village will bolster its image as a hub for economic prosperity and best showcase itself as a place where employment and professional opportunities are abundant for prospective residents and families.

We recommend the Village utilize its new brand to refresh its image among key business stakeholders – in particular site selectors - in order to support its economic development vision through the following tactics and channels:

Enhanced Online Resources	Site Selector Engagement	Business/Trade Media Outreach	Targeted Advertising	Economic Development Partnerships & Affiliations

ENHANCED ONLINE ECONOMIC DEVELOPMENT RESOURCES

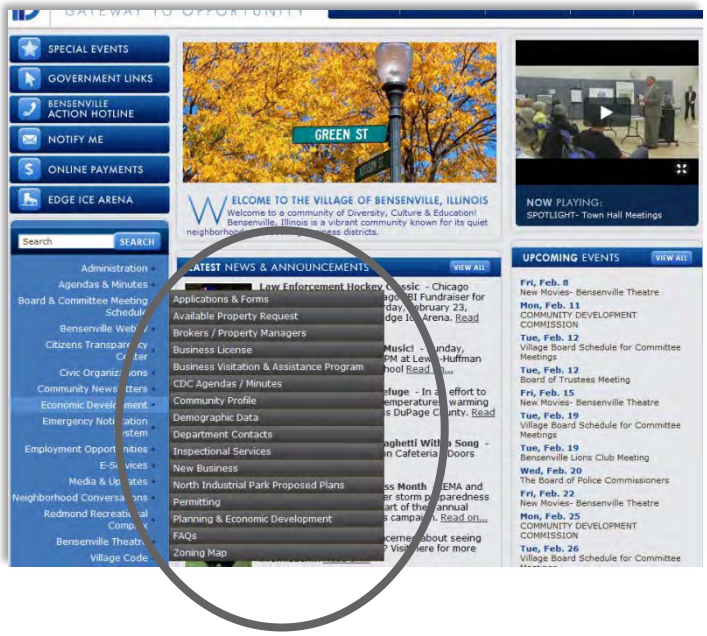
One of the best ways to increase visibility with site selection firms and the business community is to have an easily navigable and data-rich website. Most initial corporate site searches are done via the Internet, and site selectors will typically eliminate a city from their search, if they are unable to find up-to-date community information on the city's website. Therefore, it's important that the economic development portion of Bensenville's website be easily accessible and include in-depth demographic, economic and regional information.

Homepage

Economic development is at the core of the Village of Bensenville's strategic vision, therefore this subject should be prominently featured on the Village homepage. Currently, an economic development link is featured in small print on the lower left-side navigation. We recommend that it be placed among the primary navigation tabs across the top right of the homepage or alternatively, that it be combined with the Business tab to create a new "Business & Development" navigation tab (shown below). This will direct site selectors and business representatives to the information they need in a streamlined fashion without requiring them to click through an overwhelming amount of content that isn't relevant to their search.

Economic Development Dropdown Menu

The Economic Development tab on the Village of Bensenville website currently links to a long dropdown list, which may confuse, or worse, deter someone from searching for economic development information.



We recommend collapsing this long list into a more streamlined dropdown menu under the new “Business and Development” navigation tab. The long list of content show above could instead fit neatly within the four following suggested categories: **Site Selection, Community Information, Business Resources, Forms & Downloads**.

Site Selection Page

We strongly recommend a **Site Selection** subpage to make it as easy and efficient as possible for site selectors to find the information they need. This section, ideally, should contain a welcome message including key contact information for Village economic development staff and a range of information including a list of the largest employers in Bensenville, business incentives programs and current tax rates. Additional tips on specific data to include in this section can be found through the International Economic Development Council on its site selection data standards page.

Additional Recommendations for Business & Development Section

Listed below are additional recommendations on supplementary content to create an overall more robust and streamlined Business & Development section of the Bensenville website.

- **A “Top 10” list of largest village employers** (include number of employees at each business)
- **An additional section for existing businesses** highlighting the Village's local business engagement and retention efforts
- **Include additional maps** such as: current development project maps, parks & recreation maps, transportation and snow removal maps
- **Include a list of featured business properties** such as this example: (http://elgindevelopment.com/why-elgin/featured-properties/) instead of the existing property request form requiring the user to fill out a form and await a response
- **Community profile and demographics** should be housed and updated frequently on their own pages rather than uploaded as PDF pop-ups
- **A list of business affiliates or organizations** in the region and community that support Bensenville’s business and economic development, such as the GOA Business Association. Link to their websites and include contact information
- **A section featuring local/state incentives** for doing business in Bensenville

LinkedIn Page

As a social network for professionals, LinkedIn can help Bensenville connect with key stakeholders, business leaders and potential employees to support economic development. Utilizing LinkedIn’s company profiles, Bensenville can offer insights, history, contact information and an opportunity to connect with Village representatives.

Similar to other social media platforms, LinkedIn will allow the Village to share happenings and keep its audience informed. The content should be mindful of the LinkedIn audience and be geared towards the

Village's economic development initiatives. Similar to any company that engages on LinkedIn, Bensenville is selling itself and attempting to generate leads – specifically, new businesses that are interested in relocating to or expanding in Bensenville.

In order to establish Bensenville's presence on LinkedIn, best practices should be implemented, including:

- Secure 'Village of Bensenville' company page versus a group
  - A company page will allow the Village to connect and engage with the public, offer insights and promote employment opportunities
- Create a homepage that accurately tells the mission and vision of Bensenville
- Include contact information, Village population, leadership and a link to the website
- Include economic development tagline under "Specialties"
- Offer insights, including press releases, announcements, community events, staff announcements, employment opportunities, etc.
- Create banners (LinkedIn offers the option to create three) that direct users to key landing pages, such as the Bensenville website, economic development page, leadership page, Facebook, etc.

BUSINESS MEDIA OUTREACH

Through the strategic placement of stories in key business trade publications, the Village of Bensenville can elevate awareness among important business stakeholders about the many benefits and advantages of doing business in Bensenville, including its proximity to major transportation hubs.

We recommend that Village marketing and communications staff engage in a media outreach campaign targeting, initially, business-centric media outlets. While pitches should be tailored for each specific outlet and journalist's individual expertise areas, they should all serve to consistently convey Bensenville's story and its transformation into a forward-looking community that is planning for and embracing economic development and future infrastructure changes.

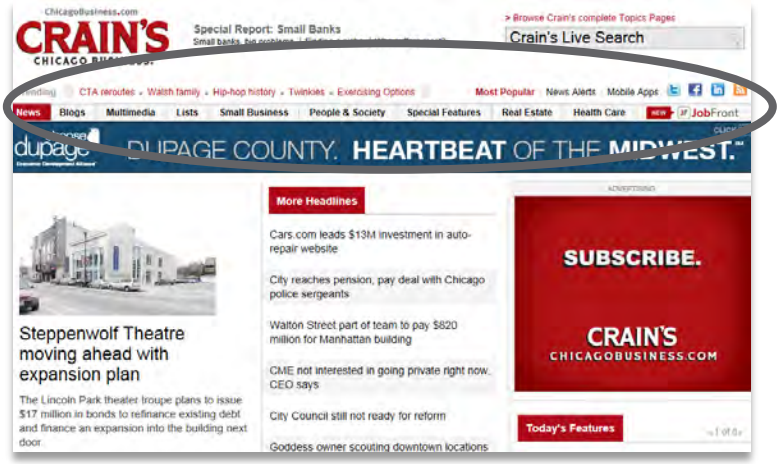
The Village President and Village economic development staff should serve as spokespeople for potential interviews with reporters at these outlets, They should be prepared for each opportunity with talking points that align with Bensenville's economic development message and vision.

Editorial calendars typically provided by media outlets can be a useful tool to help the Village marketing and communications team time the release of their media pitches. Please see Appendix A for an initial list of recommended media targets, including links to editorial calendar information.

SUGGESTED TARGET MEDIA OUTLETS
Crain's Chicago Business **Chicago Business Journal** **Site Selection Magazine** **Area Development** **Transportation & Logistics International Magazine**

TARGETED ADVERTISING

To best ensure that Bensenville's economic development message is seen and heard by key stakeholders in the business and economic development community, we recommend strategically investing in a digital and print advertising campaign targeting consumers of the above-mentioned outlets. Targeted advertisements in the print and online versions of business-centric outlets will ensure that Bensenville's new business friendly image and fresh brand identity effectively reaches this important audience segment.



Advertising options range in price depending on the format (digital, print or both) as well as size of the ad and its placement on the website or page. Please see Appendix A for links to advertising fees at each of the above listed media outlets. Advertising rates provided by the individual publications are for placement only and do not include potential fees associated with creative design, copy writing or photography.

SITE SELECTOR ENGAGEMENT

Proactively developing and maintaining relationships with site selection firms will be beneficial in supporting the Village of Bensenville's economic development marketing efforts and boosting the Village's image as a community that's "open for business."

Site selection firms act as independent third party real estate experts that work on behalf of a client to find the most appropriate location for a business from an economic and operational standpoint. Approximately half of Fortune 500 companies utilize site selection firms when seeking out new corporate locations.

Before conducting any outreach, the Village's economic development and marketing staff should have a comprehensive digital/online packet of updated economic, demographic and business data at the ready

including, including largest employers in Bensenville, incentives programs and tax rates, etc. Additional tips on which data to include can be found through the International Economic Development Council on its site selection data standards page. As outlined above, all of this information should be streamlined and easy to find on the Village website in a dedicated section for economic development professionals.

A 2011 survey of site selectors conducted by the International Economic Development Council revealed the best ways to communicate and build relationships with them. Key insights include:

- ✓ **Face-to-face is best:** Personal interaction is ideal, whether it's bringing the consultant to Bensenville for a familiarization tour or visiting the consultant's office in person.
- ✓ **Maintain E-contact:** Send quarterly email updates with succinct bullets identifying recent business expansion or economic development efforts to keep Bensenville top of mind. Do not include site selectors on general e-blast lists.
- ✓ **Pick Up the Phone:** Use short phone conversations, 10-15 minutes at most, to give an update on new incentives or companies moving in or out of Bensenville. Don't just make contact to make contact, be able to provide valuable insights that might increase his/her interest in Bensenville.
- ✓ **Go Digital:** Most site selectors prefer to receive electronic versions of information, rather than dense hard copy packets in the mail. Easily downloadable information sheets that on-the-go site selectors can print and take with them when they travel are ideal.

Please see Appendix B for a list of local Chicago area site selector firms to consider reaching out to in order to begin building relationships and raising awareness of Bensenville as a prime business location.

RESOURCES, PARTNERSHIPS & AFFILIATIONS

The Village of Bensenville can further elevate its new brand and profile as a business-friendly location by leveraging existing partnerships and expanding its network in the economic development sphere. By establishing mutually beneficial partnerships and affiliations with key businesses and organizations locally and across the region, Bensenville will position itself best to secure additional resources and build

expertise aimed at driving forward its economic development vision. We have offered some initial recommendations for the Village's consideration below.

Leveraging the Business Advisory Council

In addition to its existing Chamber of Commerce, Bensenville has an alliance of businesses called the Business Advisory Council, which is made up of several business owners in Bensenville who meet on a quarterly basis.

Many cities today are forming economic development task forces (also referred to as economic development corporations or committees), which engage leaders within the community around a mission to generate business and workforce development while retaining and supporting existing businesses. The existence of such groups sends a strong message not only to the business and economic development community but also to current and prospective residents that economic development is a city's key priority.

These groups are structured with clearly defined leadership roles and their Boards are comprised of individuals representing not only business interests, but a range of other industries and groups represented in the community who have a stake in the city's future development and growth. This ensures that economic development objectives, issues and concerns are approached in a holistic way in order to achieve the maximum community benefit.

The Village may consider taking steps to broaden its existing Business Advisory Council to include not only business owners and the Village administration but also a select handful of leaders representing other interests such as the school districts, faith-based groups, healthcare and civic organizations. Strong leadership will further reinforce the Council's mission and bolster its efforts. Additionally, a more frequent meeting schedule will keep the group engaged and add momentum to current and future economic development initiatives.

We also highly recommend that the Business Advisory Council (or potential economic development group) have an informative website that the Village of Bensenville promotes and links to on its own site. The website should include the group's mission, leadership and contact information, meeting schedules and key economic development information about Bensenville. Examples of communities with economic development entities and a strong web presence are outlined below:

COMMUNITY ECONOMIC DEVELOPMENT ENTITIES

- **Elgin, IL**: Elgin Development Group http://elgindevelopment.com/
- **Yorkville, IL**: Yorkville Economic Development Corporation: http://www.yedconline.org/index.htm
- **Westborough, MA:** Town of Westborough Economic Development Committee: http://edc.town.westborough.ma.us/index.htm
- **Elk Grove, CA**: Elk Grove Economic Development Corporation: http://www.elkgroveedc.org/

Suggested Economic Development Resources and Affiliations

Metropolitan Planning Council (MPC) – MPC is an independent, nonprofit, nonpartisan organization, that promotes and implements solutions for sound regional growth across the Chicago metropolitan area. We recommend that the Village of Bensenville connect with MPC and explore this organization as a resource to support its economic development efforts. In particular, MPC offers a number of valuable resources through its Community Building Initiative, which assists communities to respond to local issues related to housing, transportation, environment, and sustainable economic development. Additional information on the initiative, including contact information, can be found here: http://www.metroplanning.org/work/project/5

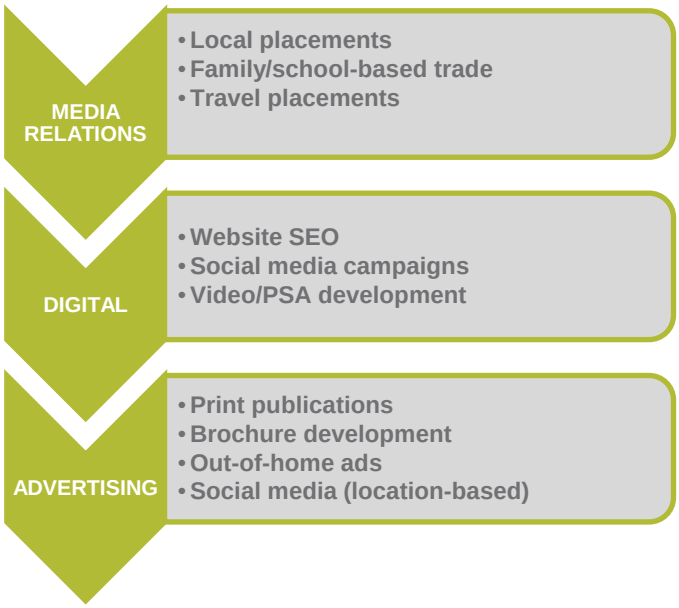
International Economic Development Council – The International Economic Development Council (IEDC) is a well-respected and renowned non-profit membership organization providing important tools, training and resources to help economic development professionals do their jobs more effectively in order to create more high-quality jobs and develop more vibrant communities. An overview of IEDC can be found here. We recommend that the Village explore opportunities for Village economic development staff to participate, when feasible, in economic development events, trainings and conferences sponsored by IEDC. Examples of training courses can be found here: http://www.iedconline.org/?p=Training_Courses

National Development Council (NDC) – The National Development Council is the oldest national non-profit community and economic development organization in the U.S. NDC offers community partners development assistance and professional training as well as small business financing and debt and equity for residential, commercial, public and non-profit facilities projects. A comprehensive overview of NDC's services can be found here.

ONGOING COMMUNICATIONS RECOMMENDATIONS: TARGETING NEW RESIDENTS

Once the Village's new brand has been established in the community and economic development marketing initiatives are underway, the Village can focus its efforts on broader awareness with a goal of attracting new residents to Bensenville – in particular families and individuals seeking affordable housing, convenience and access to major transportation outlets and enriching community resources.

Building off the foundation created by the economic development strategy, a multi-faceted approach is recommended to draw future residents. Strategic channels include a continued focus on media relations and the pitching of news stories with positive Bensenville angles, a push to improve visibility on digital platforms such as the website and social media, partnerships with Illinois entities that can shine the spotlight on the Village and the potential for advertising campaigns across a variety of outlets and platforms.



MEDIA RELATIONS

Earned media coverage presents a solid opportunity for Bensenville to create positive awareness of the Village among prospective residents. By recognizing the potential of both local newspapers and trade publications that report on education, families, travel, development and relevant industries, Bensenville's communications staff can develop story angles to generate press around these themes.

We recommend that staff develop an extensive media list to target proper reporters locally, regionally and through trade publications. Such outlets to contact regularly include, at a minimum:

LOCAL	REGIONAL	TRADE PUBLICATIONS
• Daily Herald • Chicago Tribune • Chicago Sun-Times • Chicago Parent • Drive-time radio	• Des Moines Register • St. Louis Post-Dispatch • Milwaukee Journal Sentinel • Midwest Living • Midwestern mommy bloggers	• Travel & Tourism • Education • Parenting/family • Aviation • Hospitality • Economic/Community Dev.

Monitoring the above outlets regularly for appropriate story pitches is suggested so as not to miss an opportunity for the Village to raise its profile.

DIGITAL ENHANCEMENTS & SEARCH ENGINE OPTIMIZATION

In addition to pushing traditional media placements, the Village can take advantage of the growing digital sphere to generate awareness and improve name and image recognition. Both social media and search tools provide opportunities for Bensenville to widen its reach.

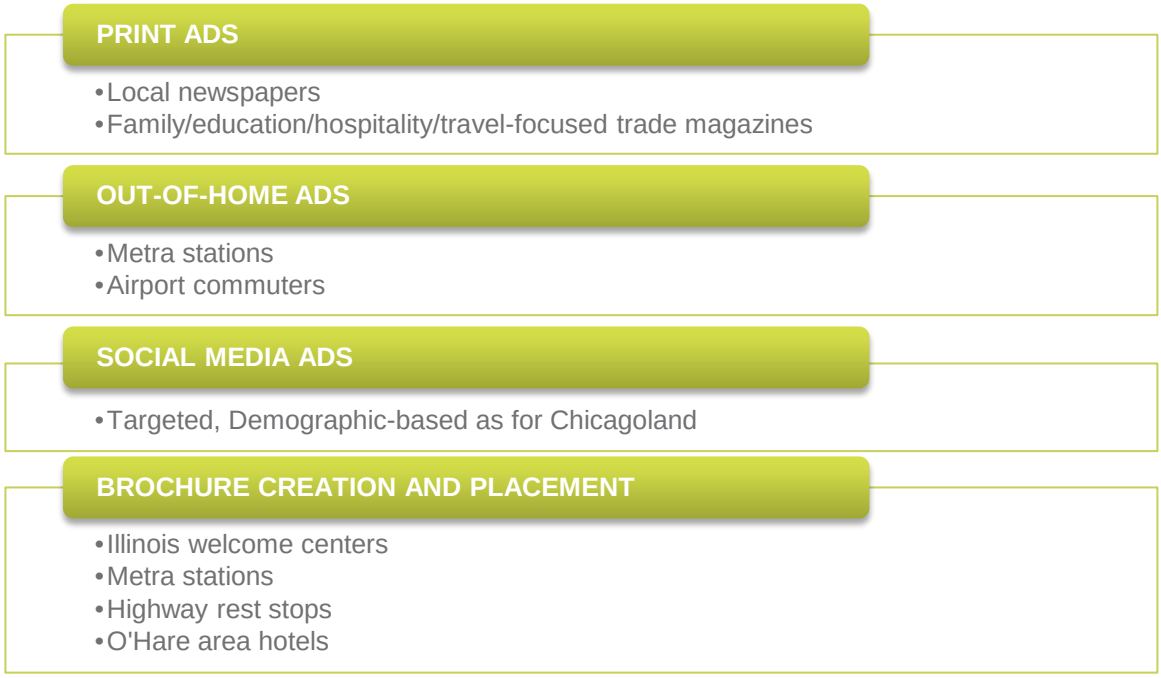
Considering nearly 60 percent of online adults use search engines such as Google or Bing daily (Pew survey, 2012), search engine optimization (SEO) can improve the Bensenville website's ranking on these sites. Utilizing keyword placement within the content of the website and social media platforms, search engines will begin to pull Bensenville higher in results. For example, if the Village seeks to focus on its school system, placing content throughout its site that touts its good schools could bump up Bensenville in the search results when an interested person searches for "good schools, Illinois" or "best school systems." More extensive SEO resources and programs can be purchased in the future as well.

The digital realm can present a multimedia opportunity for the Village through a well-produced promotional video or public service announcement (PSA). The video, exploring the best Bensenville has to offer and advancing its new brand identity, can be shared freely via the Bensenville website, e-news campaigns, YouTube and social media channels.

ADVERTISING CHANNELS

While the Village's current budget constraints may restrict widespread campaigns, advertising potentially poses the most effective means to reach untapped audiences and invite them to experience Bensenville. Reaching prospective residents who would be most receptive to these communications presents a number of opportunities for advertising and marketing collateral.

Recommendations include:



Print ads positioned in geographic and trade-based publications ensure a positive placement in chosen media and allow the Village to tout its positive messages. Out-of-home ads along Metra's Milwaukee-District/West Line (and potentially other lines) can target commuters who likely already have name awareness, especially those who live farther out from the city than Bensenville and pass by it daily.

Billboard ads placed between selected suburbs and O'Hare Airport would reach vehicle commuters, as well. Lastly, social media advertising (especially Facebook) can be made hyper-local by targeting location, gender, age and marital status, among other variables. Bensenville can use these parameters to create ads that reach their "cream of the crop" prospective residents.

Producing marketing collateral with the refreshed brand that highlights Bensenville's key differentiators is essential to promoting the Village's awareness in primary locations. We recommend, most importantly, that Bensenville's marketing staff develop a promotional brochure that can be placed at a variety of locations, including Metra stations, area hotels that serve O'Hare, Illinois welcome centers at the state's entry points and rest stops throughout the state. Additionally, the brochure can be utilized by economic development staff and taken to government- and trade-specific conferences to publicize the Village nationwide.

ONGOING COMMUNICATIONS RECOMMENDATIONS: RESOURCES

STAFFING CONSIDERATIONS

The Village of Bensenville currently employs one full-time Marketing and Economic Development Coordinator who manages the majority of the Village's communications initiatives. The Village's Cable Coordinator, along with his part-time assistant, are responsible for overseeing the Village's cable television station and studio, website, and social media efforts.

At this critical time, as Bensenville seeks to reposition the Village and enhance its image, we recommend considering the addition of an experienced full-time communications director, whose responsibility will be to lead the ongoing refinement and execution of a comprehensive and cohesive communications and marketing strategy with the support of the aforementioned team. It is common for municipalities of Bensenville's size to employ a full-time Public Information Officer (PIO) or a Community Relations Director to fill this role. This position is often supported by one or more PR/Marketing coordinators.

The PIO or Community Relations Director, ideally, will ensure that all communications efforts, across all Village departments and all communications channels, are streamlined, unified and that, ultimately, they serve to support and advance the Village's long-term community and economic development objectives.

RESOURCE ALLOCATION

Should the Village hire a full-time PIO or Community Relations director, this employee would be tasked with managing the communications budget for the Village and determining the appropriate and most effective allocation of the department's fiscal resources. In the near term, however, we have identified a few areas where the Village may wish to consider adjusting or focusing a larger portion of its budgetary and staffing resources in order to more efficiently implement this strategy and position the Village to achieve key communications objectives.

Prioritize Economic Development Advertising: As outlined in this strategy document, economic development should be an important focus of the Village's communications and marketing efforts in the coming months and initial years following the launch of the new Bensenville brand. Currently the Village devotes a portion of its budget to economic development marketing initiatives. We recommend that the Village allocate sufficient budgetary and staffing resources to implement a targeted advertising campaign in business and economic development media outlets, such as those contained in Appendix A. In addition to advertising fees, the costs of creative development, whether internal or external, should also be factored into this line item.

Shift to More Pro-Active (vs. Reactive) Media Relations: The Village of Bensenville desires increased, positive news coverage about the town and its transformation. Currently, the Village posts press releases on its website and presumably these are also distributed to local media outlets. We recommend the Village communications staff allocate more time for proactive media relations efforts in order for Bensenville to achieve its goal of more in-depth and positive news coverage.

It's important to consider that the media landscape has shifted dramatically in the past several years as newsrooms continue to cut staffs and streamline their publications in an effort to conserve limited fiscal resources. From a media relations standpoint, this means it is increasingly more challenging and time-consuming to get your story in the news. Reporters today have less time to thoroughly research their stories and often will ignore an e-blast press release, which may not provide the same context and relevant information that a thoughtfully developed story pitch can accomplish. Instead, they rely on communications professionals to "build" the story for them by providing a unique story angle, pertinent information and contacts for interviews.

Furthermore, many news outlets, including the Daily Herald and TribLocal allow individuals and organizations to post their own local news, including press releases, events and photos to their news websites, which is a straight-forward and inexpensive way to spread your message while pushing positive news higher in online search results. Click the following images below to visit TribLocal and Daily Herald news sharing platforms.

We recommend, therefore, that Bensenville's communications team dedicate more time to the development of thoughtful and compelling story ideas related to the Village's transformation and to building relationships with local reporters. While the Village should continue to post its press releases on the Village website, communications staff should also seek opportunities to create positive news content, including releases, events and images, and post this content to sites such as the Daily Herald and TribLocal in order for the Village to inexpensively raise its profile online and build increased awareness of its transformation with reporters and the public.

APPENDIX A: ECONOMIC DEVELOPMENT MEDIA OUTLETS

Outlet	First Name	Last Name	Contact Title	Circulation	Phone Number	Email	Advertising Info	Editorial Calendar
Site Selection Magazine	Mark	Arend	Editor in Chief, commercial real estate	43,849	770-325-3438	mark.arend@conway.com	http://www.siteselection.com/edcal/2013_SSedcal.pdf#search="advertise"	http://www.siteselection.com/edcal/2013_SSedcal.pdf#search="advertise"
Area Development Magazine	Geraldine "Gerri"	Gambale	Editor	42,080	516-338-0900 Ext. 211	gerri@areadevelopment	http://www.areadevelopment.com/advertise/pdfs/Rates-2012.pdf	http://www.areadevelopment.com/advertise/pdfs/EditorialCalendarFeb2013.pdf
GCX: Global Corporate Expansion	Rachel	Duran	Editor in Chief	10,000	785-312-9315	rduran@latitude3.com	http://gcxmag.com/wp-content/uploads/2012/10/GCXmediaKit20132.pdf	http://gcxmag.com/wp-content/uploads/2012/10/GCXmediaKit20132.pdf
Business Facilities Magazine	Jack	Rogers	Editor in Chief, Real Estate	43,000	732-842-7433 Ext. 290	jrogers@groupc.com	http://businessfacilities.com/media-kit/#	http://businessfacilities.com/media-kit/#
Mainstream Business								
Crain's Chicago Business	Thomas	Corfman	Assistant Managing Editor	45,658	312-649-5355	tcorfman@crain.com	http://www.crainschicagoadvertising.com/rates.php	http://www.crainschicagoadvertising.com/calendar.php
Chicago Commuter	Christine	Cotton	Managing Editor		312-263-5388	design@central-news.com	http://www.chicagocommuter.com/chicagocommuter.pdf	
Wall Street Journal	Maura	Webber Sadovi	Commercial Real Estate Columnist		773-878-2030	maura.sadovi@wsj.com	http://www.wsjlocal.com/?mod=WSJ_footer	
Forbes	Jeremy	Bogaisky	News Editor, Business		212-366-8900	jbogaisky@forbes.net	http://www.forbesmedia.com/	
Chicago Business Journal	Ben	Eubanks	Managing Editor		704-973-1000	beubanks@bizjournals.com	http://thebusinessjournals.squarespace.com/advertising-inquiry/	
Hospitality Trade Magazines								
Hotels Magazine	Nathan	Greenhalgh	Associate Editor, Hotels/Motels	60,001	312-274-2229	ngreenhalgh@hotelsmag.com	http://mk5.marketingandtechnology.com/form.aspx?ReturnUrl=%2f	
QSR Magazine (Restaurants/Fast Food)	Sam	Oches	Editor	30,383	919-489-1916 ext. 125	sam@qsrmagazine.com	http://www2.qsrmagazine.com/advertising/	http://www2.qsrmagazine.com/advertising/editorial.phtml
Lodging Magazine	Deidre	Wengen	Online Editor		215-321-9662	dwengen@lodgingmagazine.com	http://www.lodgingmagazine.com/Resource.ashx?sn=Lodging_EditCalendar_2013	http://www.lodgingmagazine.com/Resource.ashx?sn=Lodging_EditCalendar_2013
Leisure & Travel Business Magazine	Susan	Hasty	Publisher & Editor		770-507-7777	publisher@newsrx.com		
Aviation Trade Magazines								
Aviation Daily	Adrian	Schofield	Aviation Editor	18,368	202-383-2370	adrian_schofield@aviationweek.com	http://mediakit.aviationweek.com/aw/leadership.php	
Aviation Week	Madhu	Unnikrishnan	Website Editor, Aviation	18,150	202-383-2300	madhu_unnikrishnan@aviationweek.com	http://mediakit.aviationweek.com/aw/leadership.php	
Flying Magazine	Pia	Bergqvist	Senior Editor	203,590	407-628-4802	pia.bergqvist@bonniercorp.com	http://www.bonniermarinegroup.com/files/_attachments/media_kit/full_media_kit/8._fly13_mc_1-14.pdf	http://www.bonniermarinegroup.com/files/_attachments/media_kit/3._fly13_ec_10-22-12.pdf
Logistics Trade Magazines								
Logistics Management	Michael	Levans	Group Editorial Director	31,808	508-663-1500	mlevans@ehpub.com	http://www.logisticsmgmt.com/info/advertising	http://logisticsmgmt.com/images/site/LM_2013_EditCalendar.pdf
Transportation & Logistics International	John	Krukowski	Editorial Director	241,600	312-676-1101	john.krukowski@phoenixmediacorp.com	http://www.tlimagazine.com/images/tlimediakit.pdf	http://www.tlimagazine.com/images/tlimediakit.pdf

APPENDIX B: SITE SELECTION COMPANIES IN ILLINOIS

Ady International Company
315 E. Evergreen Sq.
Mt. Prospect, IL 60056
Phone: 312.560.8355
Fax: 312.560.8355
http://www.adyinternational.com

BLS Strategies
30 S. Wacker, Ste 2200
Chicago, IL 60606
Phone: 312-924-2490
http://www.blsstrategies.com/welcome.asp

Cushman & Wakefield
6133 N. River Rd.
Ste 1000
Rosemont, IL 60018
Phone: 847.518.3212
Fax: 847.518.9116
http://www.cushmanwakefield.com

Deloitte & Touche / Fantus Consulting
180 N. Stetson Ave
Chicago, IL 60601
Phone: 312.946.3000
Fax: 312.946.2610
http://www.deloitte.com

Ernst & Young
233 S. Wacker Dr.
Chicago, IL 60606
Phone: 312.879.6520
Fax: 866.288.3738
http://www.ey.com

Grubb & Ellis
500 W. Monroe St.
Ste 2800
Chicago, IL 60661
Phone: 312.698.6733
Fax: 312.698.5943
http://www.grubb-ellis.com

Jones Lang LaSalle
200 E. Randolph Dr.
Chicago, IL 60601
Phone: 312.228.2036
Fax: 312.601.1009
http://www.joneslanglasalle.com

KPMG
303 E. Wacker Dr.
Chicago, IL 60601
Telephone: 312.665.8939
Fax: 312.665.1000
http://www.us.kpmg.com

Mohr Partners
75 E. Wacker Dr.
Ste 900
Chicago, IL 60601
Phone: 312.263.7979
Fax: 312.263.7912
http://www.mohrpartners.com

Newmark Grubb Knight Frank Consulting
5600 N. River Rd.
Ste 150
Rosemont, IL 60018
Phone: 847-254-0681
http://www.newmarkkf.com/

Pollina Corporate Real Estate Inc.
401 Devon Ave.
Park Ridge, IL 60068
Phone: 847.685.9000
Fax: 847.685.9018
http://www.pollina.com

Schneider Consulting
1565 Wilmette St.
Wheaton, IL 60187
Phone: 630-841-2953
http://schneiderconsultingllc.com/

Spectrum Strategies
401 W. Superior
Chicago, IL 60610
Phone: 312.951.9020
Fax: 312.951.6221
http://www.spectrumstrategies.com

Szatan & Associates
1829 N. Cleveland
Chicago, IL 60614
Phone: 312-440-9070
http://www.szatanassociates.com/

Village of Bensenville

Stormwater Conveyance System Study of

Bensenville Ditch and Addison Creek

February 2012

Stormwater Report for Village of Bensenville

Executive Summary

The purpose of the Stormwater Study was to evaluate the existing drainage and flooding issues within the Bensenville Ditch and Addison Creek watersheds, develop a hydraulic and hydrologic model of the drainage system, formulate and evaluate alternatives, develop construction cost estimates for the alternatives and develop recommendations. The watershed boundaries are shown on Exhibit A.

These watersheds are predominantly residential with some commercial and industrial land uses. Open space is very limited in the Bensenville Ditch watershed. There is more open space in the Addison Creek watershed, predominantly the White Pines Golf Course and Redmond Reservoir. Existing stormwater infrastructure consists of storm sewers and open ditches with some very small detention basins. The Redmond Reservoir is the only large flood control facility located within the watersheds.

AECOM worked closely with Village of Bensenville Public Works staff to verify the stormwater infrastructure and drainage conditions. Output from the existing conditions models was compared with known drainage and flooding problems based primarily on anecdotal knowledge of flood prone areas as well as recorded drainage problem areas. Six problem areas were identified in the Bensenville Ditch watershed and five problem areas were identified in the Addison Creek watershed. These are shown on Exhibits D and E.

The goal of the alternatives that were developed was to provide a stormwater system that would convey the 10 percent exceedance probability storm without surcharging the system through a combination of stormwater detention and storm sewer improvements. The 10 percent exceedance probability storm is more commonly known as the 10-year frequency storm. It represents a storm event that has approximately a 10 percent chance of occurring in any given year. A secondary goal was to prevent overland flow conditions or surface ponding during the 4 percent exceedance probability storm.

Exhibits are included in the report which show the general layout of the proposed sewer improvements and the general location and size of potential detention basin areas. The layout and configuration of the detention basins would be refined during final design. Additional coordination and analysis will be required to optimize the alternatives and take into account future development and land use needs.

The report also includes sections on recommendations for implementation and a brief discussion of potential funding sources. Several alternatives will likely be best implemented in conjunction with other planned road reconstruction / repaving projects. Outside funding sources

for this type of infrastructure improvements are very limited. The concept of a stormwater utility is discussed briefly as one option for funding these infrastructure improvements.

The table below summarizes the general problem area locations, general description of the alternative and construction cost estimate. Note that the cost estimate is pure construction costs and does not include utility relocations, land acquisition, permitting or final design costs. Problem areas with a B designation refer to locations within the Bensenville Ditch watershed, those with an A designation are within the Addison Creek watershed.

Problem Area	**Description**	**Cost**
B1 – Center and Roosevelt	Sewer Replacement	$1,190,000
B2 – Grove and Wood	Sewer Replacement	$360,000
B3 – High School / Church & Main	Sewer Replacement	$1,460,000
B4 – High School / Route 83 & Irving Park	New Sewers and Detention Basins	$6,610,000
B5 – Route 83 and Irving Park	New Sewers and Detention Basin	$5,950,000
B6 – Glendale and Franzen	Sewer Replacement	$1,860,000
Subtotal	**Bensenville Ditch Watershed**	**$17,430,000**
A1 – Wood and Addison	New Sewers (option for additional detention)	$6,890,000
A2 – Belmont and David	Sewer Replacement	$8,800,000
A3 – Entry Drive and Bernice	Sewer Replacement	$920,000
A4 – Jefferson and Hawthorne	New Sewers	$750,000
A5 – Jacquelyn Drive	New Sewers and Detention Basins	$2,970,000
Subtotal	**Addison Creek Watershed**	**$20,330,000**
Total	**All Areas**	**$37,760,000**

Stormwater Report for Village of Bensenville

Introduction

This evaluation of the Village of Bensenville stormwater conveyance system is being done as part of an overall master plan for the Village of Bensenville. The stormwater conveyance systems in the Bensenville Ditch and Addison Creek watersheds were evaluated in this study. The Willow Creek stormwater conveyance system in the northern portion of the Village was not included in the study due to a current stormwater improvement project under construction in this watershed.

The purpose of this study is to identify problems areas with inadequate capacity in the existing stormwater conveyance system and evaluate potential solutions. The study was conducted using existing stormwater conveyance system information available from the Village using current rainfall amounts and distributions from Illinois State Water Survey Bulletin 70. The system capacity was evaluated using storms with a 20%, 10%, 4 %, and 1% probability (commonly referred to as the 5-, 10-, 25-, and 100-yr event) of being equaled or exceeded in any year for storm durations ranging from 1 to 24 hours. The 1% exceedance probability storm with a 24 hour duration was used to ensure that any recommended stormwater storage improvements had sufficient capacity so as to not have a negative impact on other portions of the system.

The stormwater system evaluation included all major open channel sections and all sewers 24 inches and larger. In a number of locations, pipes as small as 8 inches were included in the analysis where the Village had identified significant historical problems within the conveyance system.

Watershed Description

Bensenville Ditch Watershed

Bensenville Ditch is part of the Silver Creek watershed. The Bensenville Ditch watershed is located in the central portion of Bensenville and is aligned along Irving Park Road. The open ditch portion of Bensenville Ditch starts on the south side of Irving Park Road approximately 400 feet west of Church Road. The channel flows in an easterly direction toward O'Hare Airport. Bensenville Ditch exits the Village of Bensenville at York Road approximately 350 feet north of Irving Park Road. The watershed area upstream of York Road is 966 acres. The portion of the watershed within the Village of Bensenville is 614 acres. The Bensenville Ditch watershed boundaries are shown in Exhibit A.

The Bensenville Ditch watershed includes portions of the Village of Bensenville, City of Wood Dale, and unincorporated DuPage County. The land use is primarily residential within the watershed. There is commercial land use corridor concentrated along Irving Park Road and in downtown Bensenville along Main Street. There is some light industrial land use along York Road. The land use in the watershed was classified using the Chicago Metropolitan Agency for Planning 2005 Land Use Inventory. The land use breakdown is as follows:

- Residential 67%
- Commercial 9%
- Institutional 8%
- Industrial 5%
- Open Space 4%
- Vacant 5%
- Miscellaneous 2%

Addison Creek Watershed

Addison Creek is part of the Salt Creek watershed. The Addison Creek watershed covers the southern portion of the Village of Bensenville. In addition to Addison Creek, the watershed includes Addison Creek Tributary No. 1, Addison Creek Tributary No. 2, Addison Creek Tributary No. 3, and Tributary A. Addison Creek begins at the outlet from Redmond Reservoir at George Street. Tributary No. 1 begins near the Village of Bensenville waste water treatment plant and flows into the spillway on the north side of Redmond Reservoir near the Village of Bensenville Public Works offices. Tributary No. 2 begins on the White Pines Golf Course near the intersection of Church Road and Red Oak Street and flows east to the spillway on the west side of Redmond Reservoir just east of Park Street between Red Oak Street and George Street. Tributary No. 3 begins in the Fischer Woods Forest Preserve and flows east through White Pines Golf Course to its confluence with Tributary No. 2 near Grace Street between Red Oak Street and George Street. Tributary A also begins in Fischer Woods Forest Preserve and flows east into White Pines Golf Course to its confluence with Tributary No. 3. The watershed upstream of the Redmond Reservoir outlet is 2,381 acres. The portion of the watershed with the Village of Bensenville is 1,174 acres. The watershed boundary and tributaries are shown in Exhibit A.

The Addison Creek watershed includes portions of the Village of Bensenville, City of Wood Dale, Village of Addison, and unincorporated DuPage County. The land use is primarily residential. The largest land use within the watershed is residential. The land use in the watershed was classified using the Chicago Metropolitan Agency for Planning 2005 Land Use Inventory. The land use breakdown is as follows:

- Residential 55%
- Commercial 3%
- Institutional 4%
- Industrial 7%
- Transportation 2%
- Open Space 26%
- Vacant 1%
- Miscellaneous 2%

Modeling Approach

XP-SWMM

The XP-SWMM software was used in the evaluation of the existing stormwater conveyance system and any proposed improvements to the system. XP-SWMM was used since it will compute runoff hydrographs using the NRCS hydrology methods. The software evaluates the pipe system, open channels, storage basins, and overland flow paths together within the hydraulics portion of the model. XP-SWMM is based on the Stormwater Management Model (SWMM) software developed by the USEPA. The improvements to the SWMM software made by XP Software incorporate additional runoff methods and improved input and output methods that allow the import/export of data from/to other formats compatible with GIS/CAD. XP-SWMM is widely used around the world to evaluate stormwater, combined sewer, sanitary sewer, and open channel systems.

Hydrology

The Bensenville Ditch and Addison Creek watersheds were delineated using elevation data from DuPage County and the Village's existing stormwater conveyance system. The elevation data from DuPage County consisted of 1-foot contours and a digital elevation model (DEM) with a 3 foot grid cell.

Subbasins in each watershed were then delineated at the upstream ends of the system, junctions, significant inflow points, stormwater problem areas, and stormwater storage basins. The Bensenville Ditch watershed has 98 subbasins ranging in size from 0.1 to 115.2 acres with a median size of 3.2 acres. The Bensenville Ditch subbasin locations are shown in Exhibit B. The Addison Creek watershed has 136 subbasins ranging in size from 0.1 to 380.2 acres with a median size of 7.9 acres. The Addison Creek subbasin locations are shown in Exhibit C.

The NRCS runoff method was used to determine the runoff hydrographs from each subbasin. The NRCS runoff method requires the drainage area, runoff curve number, directly connected impervious area percentage, and time of concentration as input parameters. The runoff curve number represents the amount of runoff that will occur from the subbasin and is a representation of the soils and land use in the subbasin. The directly connected impervious area percentage represents the amount of surface area in each subbasin that will contribute runoff to the stormwater system without flowing across a pervious area where infiltration will occur. The time of concentration represents the amount of time for runoff from the most distant point in the watershed to reach the outlet of the subbasin.

The runoff curve number for each subbasin was estimated using the NRCS soil maps and the CMAP 2005 Land Use inventory. A curve number was assigned to each land use type for each of the NRCS hydrologic soil groups. Based on the soil type and land use, a grid of curve numbers was developed for the watersheds using the soil group and land use in each grid cell. The average runoff curve number was then computed for each subbasin.

The directly connected impervious percentage for each subbasin was computed in a similar manner as the runoff curve number. A directly connected impervious percentage was assigned to each of the land use categories in the CMAP 2005 Land Use inventory. The average directly connected impervious percentage was computed for each subbasin from the impervious grid.

The NRCS time of concentration methodology was used to compute the time of concentration for the subbasins. This methodology computes the travel time for overland flow, shallow concentrated flow, and channel flow. A longest flow path was delineated for each subbasin based on the contours and the existing stormwater conveyance system in the subbasin. The overland flow travel time was based on the lot size or a maximum length of 100 feet. The channel length was based on the distance within the stormwater conveyance system. The shallow concentrated flow length was determined by subtracting the overland and channel flow lengths from the longest flow path. The time of concentration was computed for a representative number of basins with similar land use parameters and sizes. A set of regression equations was developed for computing the time of concentration based on drainage area for the subbasins for similar land use. The time of concentration was computed directly for the larger subbasins and basins with unusual features.

The rainfall amounts were taken from the Illinois State Water Survey Bulletin 70 for northeastern Illinois. The Huff rainfall distributions for the 1st, 2nd, and 3rd quartile storms from Bulletin 70 were used for the appropriate duration storms based on the Illinois Department of Natural Resources – Office of Water Resources for determining the critical duration storm.

Conveyance System

The stormwater conveyance system inputs to the XP-SWMM model were obtained from sewer atlas information provided by the Village of Bensenville, existing as-built plans for recent Village projects or permit plans, limited field survey, field measurements of the depth from the structure rim to the pipe invert, and field inspection. In locations where rim and invert elevations were not available from the atlases, as-built plans, or field survey, the rim elevation of the structure was estimated based on the DEM and contour information from DuPage County. The pipe inverts were then estimated at these structures

based on the measured depth from the structure rim. Pipe sizes were obtained from the atlases, plans, and field inspections. Pipe lengths were measured in GIS based on the georeferenced storm sewer atlas and manhole locations from survey and an existing Village of Bensenville GIS database with manhole locations.

For the open channel sections of the stormwater conveyance system, the cross section information was obtained from existing hydraulic models. For Bensenville Ditch, the current FEMA model was obtained from Christopher B. Burke Engineering, Ltd (CBBEL) which was used for their design of the Bensenville Ditch channel relocations on O'Hare Airport. For Addison Creek, the cross sections were obtained from a CBBEL report prepared for the Village of Bensenville. For Addison Creek Tributary No. 1, an existing model was not available. Cross sections for this tributary were developed from the contour information and DEM available from DuPage County.

Manning's n values for the pipe system were taken from standard tables for the pipe material. For open channel sections, the existing model n values were used where applicable. For other locations, the manning's n values were estimated based on field inspection and aerial photos.

Overland Flow

During model development, locations were identified where the existing underground stormwater conveyance system did not have adequate capacity to carry the full flow without surcharging above the rim elevation at the structures. As these locations were identified, overland flow paths were added to the model. The overland flow paths were determined based on the contour and DEM data from DuPage County. For locations where the flow would follow the street down to the next manhole, a typical street cross section was input into the model. For locations where the flow path did not follow the streets, cross sections were developed from contour data. Longitudinal slopes for these overland flow paths were estimated based on the contour data. Based on model input requirements, the node rim elevation was increased by 10 feet at any location with overland flow.

Overland flow paths were added for all storms up to the 4% exceedance probability storm.

The final model schematics for Bensenville Ditch and Addison Creek are shown in Exhibits D and E, respectively. The different link types are shown with different symbols shown in the legend. The different link types are for pipe only, combination of pipe/orifice/weir/overland flow conditions, open channel, overland flow only, and spillways.

Existing Condition Results

The XPSWMM model results could not be calibrated to historic storms due to the lack of surveyed flood elevations. The model results were compared to reported flooding problems and locations where Village staff have observed flooding problems in previous storms. The Village had maps of known problem areas and approximate extents of flooding during the September 2008 storm. The flooded node locations were compared to these maps to determine if the results were consistent with the reported flooding problems.

Bensenville Ditch Watershed

The Bensenville Ditch watershed stormwater system was modeled for the 20%, 10%, and 4% probability exceedance storms for the 1, 2, and 3 hour durations along with 1% probability exceedance storm for the 24 hour duration. The 2 hour duration storm was determined to be the critical duration storm for the largest portion of the watershed. There were several areas where the 1 or 3 hour storm produced higher peak stages than the 2 hour storm. In locations where different storm durations produced higher stages, the peak stages were generally within 0.25 feet (3 inches) of the 2 hour storm. This minor difference in stage was determined to be insignificant for identifying existing problem areas and sizing proposed improvements. The 1% probability exceedance 24 hour duration storm was used to determine if the

proposed improvements have a negative impact on flooding within the watershed and to ensure that any new storage basins do not create a new problem area. There were six (6) areas where the existing stormwater conveyance system did not have sufficient capacity for the 10% exceedance probability storm without resulting in overland flow.

A detailed description of each of the problem areas is included below along with the improvements examined for each problem area.

Addison Creek Watershed

The Addison Creek watershed stormwater system was modeled for the 20%, 10%, and 4% probability exceedance storms for the 1, 2, and 3 hour durations along with 1% probability exceedance storm for the 24 hour duration. The 2 hour duration storm was determined to be the critical duration storm for the largest portion of the watershed. There were several areas where the 1 or 3 hour storm produced higher peak stages than the 2 hour storm. In locations where different storm durations produced higher stages, the peak stages were generally within 0.25 feet (3 inches) of the 2 hour storm. This minor difference in stage was determined to be insignificant for identifying existing problem areas and sizing proposed improvements. The 1% probability exceedance 24 hour duration storm was used to determine if the proposed improvements have a negative impact on flooding with the watershed in the vicinity of the Redmond Reservoir and to ensure that any new storage basins do not create a new problem area. There were five areas where the existing stormwater conveyance system did not have sufficient capacity for the 10% exceedance probability storm without resulting in overland flow.

A detailed description of each of the problem areas is included below along with the improvements examined for each problem area.

Improvement Design Criteria

The goal of the improvements was to provide a stormwater conveyance system that would convey the 10% exceedance probability storm without surcharge where possible and not increase stages upstream and downstream of the project. The sewers were sized so that the flow for the 10% storm was in either open channel flow conditions in the pipe or that the hydraulic gradeline was parallel to the pipe slope where tailwater conditions precluded open channel flow conditions. A secondary design criterion was to prevent overland flow conditions or surface ponding during the 4% exceedance probability storm within the improved sections of the stormwater conveyance system.

Where possible, the new sewers should be located within alleys and avoid major streets.

It should also be noted that the existing sewer system for the Bensenville Ditch Watershed has a shallow depth of cover over the top of pipe in some locations. Where proposed sewers must tie-in to these shallow locations, there may be less than two feet of cover over the top of the proposed pipe. The exact amount of ground cover over the sewer will be determined during the design stage.

Problem Area Descriptions and Alternatives Studied

Problem Area B1

Description

These sewers serve the area near Center Street and Roosevelt Avenue, which includes part of the downtown area, as well as local residences. The primary alignment is south along Center Street to Roosevelt Avenue, then east to York Road, and then north to Bensenville Ditch. See Exhibit F for a location map of this problem area.

For the 10% exceedance probability storm, the primary flooding problems were along Center Street and York Road. For the 4% exceedance probability storm, the surface flooding also occurs along Roosevelt Avenue and is deeper in the other locations.

One of the primary causes of flooding in this area is the inadequate capacity of the sewers in Center Street and Roosevelt Avenue. Additionally, there is a low point at Center Street just north of Roosevelt Avenue and in the alley between York Road and Center Street just north of Roosevelt.

It should be noted that the model also showed flooding in the area adjacent to Roosevelt Avenue and Ashby Way. However, the Village has not heard any reports of surface flooding at this location. Based on comments from Village staff, no improvements were planned for this area.

Alternatives Studied

Two primary alignments were considered for the proposed improvements for this area, which consists only of new sewers. The first and most direct route considered was to follow the existing sewer along York Road. However, York Road was recently resurfaced, and the Village staff directions were to avoid recently resurfaced roads where possible. The second alignment for this problem area, which follows along Roosevelt Avenue from York Road to Center Street and along Center Street from Main Street to an alley just south of Irving Park Road, was studied. The new sewer will extend west in the alley and then discharge directly into Bensenville Ditch. The proposed sewers were sized for the 10% exceedance probability storm including the tail water from Bensenville Ditch. The proposed sewers will convey the 4% exceedance probability storm without surface ponding or overland flow. See Exhibit F for the proposed alignment and sewer sizes.

Problem Area B2

Description

These sewers serve the neighborhoods southeast of the high school along Grove Avenue and Wood Avenue. These sewers drain to Church Road, which empties into Bensenville Ditch (see Problem Area B3 below). The main problem area is at the intersection of Ellis Street and Grove Avenue. New, large diameter sewers were recently installed along Ellis Street. However, this new sewer system ties into the existing sewer system by an 18-inch diameter storm sewer. Due to this bottleneck, this intersection floods during the 10% exceedance probability storm. For the 4% exceedance probability storm, the surface flooding is deeper at this location. See Exhibit G for a location map of this area.

Alternative Studied

The proposed improvements for this area include the replacement of sewers in Ellis Street and Grove Avenue. The proposed sewers were sized for the 10% exceedance probability storm. The proposed sewers will convey the 4% exceedance probability storm without surface ponding or overland flow. See Exhibit G for the proposed alignment and sewer sizes.

Problem Area B3

Description

These sewers serve the east portion of the high school, including the parking lots, as well as part of the downtown area along Main Street. These sewers drain to parallel sewers in Church Road, which empty into Bensenville Ditch. The sewer on the east side of Church Road utilizes a small detention basin (Veteran's Park) for storage purposes. The intersection of Church Road and Green Street has historically

had significant flooding problems. However, a small berm was constructed near the high school, which should reduce the frequency and depth of flooding at this intersection. As a result of this berm, the high school athletic fields at the northeast corner of the high school now experience surface flooding. See Exhibit H for a location map of this area.

For the 10% exceedance probability storm, both the intersection at Church Road and Green Street and the athletic fields at the northeast corner of the high school experience flooding. Additionally, the Veteran's Park detention basin overtops and flows overland directly into Bensenville Ditch. For the 4% exceedance probability storm, surface flooding is slightly deeper at these same locations.

Alternative Studied

The proposed improvements for this area include the replacement of existing sewers in Church Road and the installation of new sewers in Green Street and Church Road. The proposed sewers were sized for the 10% exceedance probability storm. The proposed sewers will convey the 4% exceedance probability storm without surface ponding or overland flow. The model shows that the existing berm at the high school could be removed for the 10% and 4% exceedance probability storms. However, it is recommended that the existing berm be left in place, as this berm would reduce the frequency and depth of flooding at Church Road and Green Street during larger storm events. The high school parking lots will now drain to Church Road via the proposed 36-inch sewer in Green Street, which will alleviate most of the flooding currently happening in the high school athletic fields (i.e. behind the berm). An existing 18-inch diameter sewer located parallel to the railroad tracks on the north side of the school has reportedly forced water out of a drainage structure on the west side of the berm. At this point in time, we recommend leaving this sewer in place.

The DuPage Water Commission has a 36-inch diameter water transmission main that parallels the railroad tracks at Church Road. The Village's proposed 42-inch diameter sewer will cross this water main. Based on construction record drawings received from the DuPage Water Commission, there is no conflict between the sewer and water main. However, the exact elevation of this transmission main should be field verified during the design stage.

Finally, it should be noted that Veteran's detention basin overtops during the 4% exceedance probability storm. However, the design intent of the detention basin is for the excess water to simply flow overland though a baseball field and discharge into Bensenville Ditch.

See Exhibit H for proposed alignments and sewer sizes.

Problem Area B4

Description

These sewers serve the west portion of the high school, as well as residential areas (located in the City of Wood Dale) west of Illinois Route 83. Some of the flow from this residential area collects at the southeast corner of Grove Avenue and Illinois Route 83, and then drains to the backside of the high school. A 3'x 3' box culvert under Illinois Route 83' also discharges additional flow from Wood Dale onto the backside of the high school, then flows under the railroad tracks to Irving Park Road, where it enters IDOT's storm sewer system and eventually discharges to Bensenville Ditch. The remaining flow from the residential area in Wood Dale flows under the railroad tracks just west of Illinois Route 83, then drains under the parking lots of several commercial properties along Irving Park Road, then enters the IDOT storm sewer system, and eventually discharges into the Bensenville Ditch. See Exhibit I for a location map of this area.

For the 10% exceedance probability storm, there is surface flooding along virtually the entire sewer alignment. There is extensive flooding in the commercial area at the southwest corner of Illinois Route 83 and Irving Park Road that has been confirmed by the Village of Bensenville. While the sewers on the near west side of the high school also appeared to have significant surface flooding, the Village has not had any complaints from the high school concerning this area. It is assumed that the athletic fields in the northwest corner of the high school have significant surface flooding, as the existing 3-foot by 3-foot box culvert discharges into an 18-inch diameter storm sewer pipe.

For the 4% exceedance probability storm, surface flooding occurs at these same locations but is slightly deeper.

Alternative Studied

The proposed improvements for this area include the replacement of existing sewers on the west side of the high school, the installation of new sewers along Illinois Route 83 and parallel to Irving Park Road, and the construction of two detention basins at Illinois Route 83 and Irving Park Road. The proposed sewers were sized for the 10% exceedance probability storm. The proposed sewers will convey the 4% exceedance probability storm without surface ponding or overland flow.

The detention basin to the west of Illinois Route 83 (Detention Basin #1) would have a depth of approximately 20 feet with a maximum storage volume of approximately 11.9 ac-ft. The bottom elevation would be approximately 669 ft NAVD88 (existing ground elevation is approximately 689 ft NAVD88). The outlet control structure for Detention Basin #1 would consist of an 18-inch diameter outlet pipe and an overflow weir at an elevation of 686 ft NAVD88. If flow overtopped the weir, it would discharge out of Detention Basin #1 via a 42-inch diameter outlet pipe. The detention basin to the east of Illinois Route 83 (Detention Basin #2) would have a depth of approximately 8 feet and a maximum storage volume of 17.4 ac-ft. The bottom elevation will be approximately 668 ft NAVD88 (existing ground elevation is approximately 676 ft NAVD88). The outlet control structure for Detention Basin #2 would consist of a 36-inch diameter outlet pipe and an overflow weir at an elevation of 673 ft NAVD88. If flow overtopped the weir, it would discharge out of the detention basin via a 54-inch diameter outlet pipe. The 1% exceedance probability 24 hour duration storm has a high water elevation of 686.6 ft NAVD88 in Detention Basin #1 and 675.3 ft NAVD88 in Detention Basin #2. The detention basins have been designed to have similar bottom elevations to allow utilization of both detention basins to minimize the ponding depth for more frequent storms. The basin depths were set by the need to have a connecting pipe under Illinois Route 83 and the elevations of the six petroleum pipelines within this right-of-way. The footprint and bottom elevations of the basins can be optimized during final design.

Since the Irving Park Road sewer system does not have sufficient capacity to convey all of the existing flow from this area during a large storm event, a 60-inch diameter sewer discharging directly into Bensenville Ditch is proposed (see Exhibit I). The proposed sewer alignment is located in an area being studied for in-fill residential revitalization. The exact alignment of the sewer will be determined based on the final revitalization plan. If the sewer is constructed prior to this redevelopment, easements will be required along the final alignment.

There are six petroleum pipelines running parallel to Illinois Route 83 – three on the east and three on the west. The record drawings for the DuPage Water Commission's water transmission main show these six oil pipelines in profile. Based on the elevation of the pipelines in these drawings, there is no conflict between the proposed sewer and oil pipelines. However, the exact size and elevation of these oil pipelines should be field verified during the design stage. See Exhibit I for proposed alignments, sewer sizes and detention basin locations.

Following an initial review by the Village Public Works staff, AECOM developed preliminary plans for reducing the area required by the detention basins by storing some stormwater in underground detention vaults. The High School is investigating a major reconstruction of its athletic fields. Some stormwater could be stored under these fields, thus reducing the volume to be stored in the open basins. Underground storage is generally in the range of $3.5 to $7 per cubic foot of storage. While this is significantly higher than the cost for open detention basins, it does allow for more land use in high value real estate.

Flow coming from the Route 83/Grove Ave and Dunlay St/Spruce Ave/Montrose Ave areas could be stored under the high school, though it would be significantly more expensive than using the current proposed detention basins on the north side of the railroad tracks.

Preliminary plans and estimates were developed for three options:

Option 1 would add 8.2 acre feet of storage beneath the athletic fields. This would allow a reduction of the size of the basin east of Kingery Highway from 17.4 acre feet to 9.2 acre feet at an approximate cost increase of $2.6 million.

Option 2 would add 16.4 acre feet of underground storage beneath the athletic fields, eliminate the basin to the west of Kingery Highway and decrease the size of the basin east of Kingery Highway from 17.4 acre feet to 11.9 acre feet at an approximate cost increase of $6.5 million.

Option 3 would place all of the storage originally envisioned for this area into underground storage (no storage under the athletic fields) at an additional cost of $9.3 million.

Options 1 and 2 are shown on Exhibits I-1 and I-2. Additional hydraulic modeling and design of the underground storage system would be necessary to refine the design, layout and cost estimate for these options.

Problem Area B5

Description

The sewers in this area start west of Illinois Route 83 near Stoneham Street and Spruce Avenue and flow generally in a southeasterly direction to Irving Park Road approximately 400 feet east of Eastview Avenue. There are two short sections of open channel on the east and west sides of Illinois Route 83 that includes a 36-inch RCP culvert under Illinois Route 83. The sewers continue along Twin Oaks Street to Marshall Road to Hillside Drive to Franzen Drive and then connecting to a sewer along Irving Park Road. There is a short section of sewer along East View Avenue that connects to the Irving Park Road Sewer. There is a second tributary sewer that starts near Hillside Avenue and Church Road that meanders through a residential area in easements that discharges to the Irving Park Road sewer at the IDOT box culvert under Irving Park Road. See Exhibit J for a location map of this area.

For the 10% exceedance probability storm, there is surface flooding along much of the west branch of the west sewer alignment. A depressed area at Hillside Drive and Franzen Avenue had significant surface flooding, which was confirmed by the Village. For the east sewer alignment, there was street surface flooding at Hillside Drive and Church Road. Many of the other manholes along the east alignment are located in depressed ground areas of residential backyards. These depressed areas also experience flooding, though it did not extend into homes or out into the street. The sewer system connects to an existing 2½-foot by 8-foot box culvert under Irving Park Road. During larger storms, water backs up in this culvert and causes some surface ponding north of Irving Park Road. The problem areas for the east alignment were also confirmed by the Village. For the 4% exceedance probability storm for the east and west alignments, surface flooding occurs at the same locations but is slightly deeper.

Alternative Studied

The proposed improvements for this area include the installation of new sewers along Twin Oaks Street, Hillside Drive, and Church Road and the replacement of an existing sewer in Eastview Avenue. It also includes the construction of a new detention basin at Mohawk Elementary School at Franzen Avenue and Hillside Drive. Based on discussions with Village staff, the elementary school will be abandoned in the next several years, after which time the area would be available for the detention basin.

The proposed sewers were sized for the 10% exceedance probability storm. The proposed sewers will convey the 4% exceedance probability storm without surface ponding or overland flow.

The detention basin would have a depth of approximately 5 feet and a maximum storage volume of approximately 6.75 ac-ft. The bottom elevation will be at 676 ft NAVD88 (existing ground elevation is approximately 681 ft NAVD88). The outlet control structure for the detention basin would consist of a 24-inch diameter outlet pipe and an overflow weir at an elevation of 679 ft NAVD88. If flow overtopped the weir, it would discharge out of the detention basin via a 42-inch diameter outlet pipe. The 1% exceedance probability 24 hour duration storm has a high water elevation of 679.6 ft NAVD88.

There is an existing detention basin at the east end of Twin Oaks Street, which is currently part of a private residential area. The storage in this private detention basin would be incorporated into the new storage at Mohawk Elementary School. This private detention basin was not included in any of the existing or proposed scenarios in the XP-SWWM model, due to the small area it impacted.

A critical aspect of the design of scenario B5 will be the 42-inch diameter sewer crossing of Irving Park Road. It is expected that Irving Park Road will be heavily congested with utilities. Additionally, Irving Park Road is an IDOT highway, which will make utility relocation challenging. An alternative would to be to extend the proposed sewer east along Hillside Drive, rather than travel south along Church Road. Once Hillside Drive ends, the sewer would travel south through easements before discharging directly into Bensenville Ditch on the north side of Irving Park Road. However, due to the easements required for this route, this alternative is not preferred.

The modeling indicated some surface ponding near Spruce Avenue and Stoneham Street. Based on comments from the Village staff, this area has not had previous ponding problems. The sewer system upstream of this location was not included in the model. The model may be over representing the peak flow from this area. A 36-inch sewer in this area would eliminate the surface ponding for the 10% exceedance probability storm. This sewer replacement was not included in the proposed project.

Also, a backflow prevention device should be installed in the opening of the 2½-foot by 8-foot culvert on the north side of Irving Park Road to prevent water from leaving the sewer.

See Exhibit J for the proposed alignment and sewer sizes.

Problem Area B6

Description

These sewers serve the residential areas along Illinois Route 83, north of Irving Park Road and south of Hillside Drive. The primary alignment is east along Commercial Street to Spruce Avenue, then south to Glendale, then east to Franzen Avenue, then south to Irving Park Road (see Problem Area B5 above) and discharges into Bensenville Ditch. A portion of the City of Wood Dale drains to these sewers. See Exhibit K for a location map of this area.

For the 10% exceedance probability storm, there is surface flooding along the majority of the sewer alignment. The Village confirmed that Glendale Street has problems with flooding, where an open

channel flows into a 36-inch diameter sewer that crosses Illinois Route 83. For the 4% exceedance probability storm, surface flooding occurs at these same locations but is slightly deeper.

Alternative Studied

The proposed improvements for this area include the replacement of sewers in Glendale Street and Franzen Avenue. The proposed sewers were sized for the 10% exceedance probability storm. The proposed sewers will convey the 4% exceedance probability storm without surface ponding or overland flow. It should be noted that the model showed these existing sewers along Glendale and Franzen were surcharging but did not show any surface flooding during the 10% exceedance probability storm.

Also, assuming all of the proposed scenarios (B1 through B6) were constructed, the model showed some surface flooding at the upstream and downstream end of the existing 27-inch by 45-inch elliptical sewer along Spruce Avenue. Upsizing this sewer pipe and the immediate downstream pipe in Glendale Street to 34-inch by 53-inch elliptical sewers alleviates flooding at this location for the 10% exceedance probability storm. The Village staff is not aware of any surface ponding problems in this area. The sewer system upstream of this location was not included in the modeling. The model may be over representing the magnitude of the peak flow at this location. This sewer replacement was not included in the proposed project.

Finally, the existing 36-inch diameter sewer under Illinois Route 83 is currently sized for the 10% exceedance probability storm. However, if IDOT reconstructs this portion of Illinois Route 83 and the above improvements are made, it is recommended that this sewer be increased to a 42-inch diameter sewer to increase sewer capacity.

See Exhibit K for the proposed alignment and sewer sizes.

Problem Area A1

Description

Problem Area A1 is on the sewer tributary to Tributary No. 1. This sewer serves the area from Lions Park (Wood Avenue and Addison Street) to the upstream end of Tributary No. 1 near the wastewater treatment plant. The primary alignment is east along Wood Avenue to May Street, then south to Pine Avenue, then east to Rose Street, then south and east to a stormwater storage basin at Marion Street and Memorial Street, and then east along an easement between Memorial Street and Washington Street to Tributary No. 1.

For the 10% exceedance probability storm, the primary flooding problems were along the alleys and Addison and Center Streets south of Wood Avenue, along Pine Avenue between May and Rose Streets, and near Marion and Memorial Streets. The majority of the sewers in this area were surcharged to near ground level during this storm. For the 20% exceedance probability storm, there is surface flooding along the alleys and streets south of Wood Avenue along with sewer surcharging in other portions of the system. For the 4% exceedance probability storm, the surface flooding occurs in the same locations as the 10% exceedance probability storm, but is deeper.

One of the primary causes of flooding in this area was the inadequate capacity of the sewers in Wood Avenue and May Street. With the area west of York Road being lower in elevation than the ground near May Street and Wood Avenue, whenever the capacity of the sewer in May Street is exceeded flooding occurs in the low areas along the alleys and Addison and Center Streets south of Wood Avenue.

Alternatives Studied

Several alternatives were examined to solve the stormwater conveyance problems. The alternatives included new sewers west of York Road on a new alignment to better drain the low areas along the alleys and Addison and Center Streets south of Wood Avenue. The new sewers will be constructed in the alleys west of York Road. These new sewers will drain to a new sewer in the alley south of Pine Street. Several existing sewers will be abandoned. By diverting this water into the new sewer south of Pine Street, the existing sewers in Pine Street, Wood Avenue, May Street, and Rose Street east of York Road have sufficient capacity for the remaining area tributary to these sewers. Where the new sewer crosses the existing sewer in the alley at Rose Street extended, all of the flow will be diverted into the new sewer and the existing sewer to the south will be abandoned. At this point several alternative alignments for the new sewer were evaluated.

The potential for additional stormwater storage in the area west of York Road was evaluated. There was no open land available in this area at present. Additional storage in this area would require a minimum of two adjacent lots to construct a stormwater basin with sufficient depth and reasonable sideslopes. A two lot stormwater storage basin provides for a minor reduction in maximum water surface elevations in the area west of York Road, but does not result in a change in pipe sizes required. A six lot stormwater storage basin will provide a larger reduction in maximum stage in the area west of York Road. The six lot stormwater storage basin will allow for the reduction of the pipes by one size for several sewer segments.

Alternative A1 – the Park Street Option continues the new sewer along the alley to Sunrise Park. A new stormwater storage basin would be constructed in the northern portion of Sunrise Park. The basin would cover approximately 1.4 acres and have a depth of 10 feet providing 10 acre-feet of storage volume. The sewer would then continue from Park Street via Marion Street and Pine Street. The sewer in Park Street would run south to the existing storm sewer to Tributary No. 1. The existing sewer between Park Street and Tributary No. 1 would be replaced. The stormwater storage basin in Sunrise Park is required to prevent increasing stages on Tributary No. 1 north of the Redmond Reservoir. See Exhibit L for the proposed alignment and sewer sizes. Several other potential sites for the detention storage at were discussed with Village staff including the east side of Park Street at Pine Avenue. The one potential problem with this alignment is the sewer between Park Street and Tributary No. 1. With the main sanitary sewer conveying flow to the wastewater treatment plant in this same easement, there is the potential for conflicts between the sewers.

Alternative A1 – the Evergreen Street Option uses Evergreen Street rather than Park Street. The sewer in Evergreen Street will discharge to Redmond Reservoir rather than Tributary No. 1. See Exhibit M for the proposed alignment and sewer sizes. The pipes were sized for with and without stormwater storage in Sunrise Park. The Village plans on reconstructing Evergreen Street in the next couple of years. This would allow the sewer construction to be done concurrently with the street reconstruction and minimize the amount of pavement patching and disruptions to traffic. One drawback to this alignment is that the sewer depth will be approximately 20 feet in Evergreen Street to pass under the sanitary sewer to the wastewater treatment plant.

The sewers in both alternatives were sized for the 10% exceedance probability storm. The alternatives will allow the proposed system to convey the 4% exceedance probability storm without surface ponding or overland flow.

Problem Area A2

Description

Problem Area A2 is on a sewer tributary to Tributary No. 3. This sewer serves the area from Belmont Avenue and David Drive, then along Belmont Avenue, Pamela Drive, and Dennis Drive to Tributary No. 3 which is in an enclosed conduit in Jacquelyn Drive.

For the 10% exceedance probability storm, there is some surface flooding at Belmont Avenue and David Drive and the sewer is surcharged to ground level in the vicinity of Pamela Drive and Dennis Drive. For the 4% exceedance probability storm, the flooding at Belmont Avenue and David Drive is deeper and there is overland flow along Pamela Drive and Dennis Drive due to the sewer surcharging.

Alternative Studied

The proposed improvement for this area is the replacement of the sewers in Belmont Avenue, Pamela Drive, and Dennis Drive. The proposed sewers were sized for the 10% exceedance probability storm. The proposed sewers will convey the 4% exceedance probability storm without surface ponding or overland flow. See Exhibit N for the proposed alignment and sewer sizes.

Problem Area A3

Description

Problem Area A3 is along Entry Drive between Bernice Drive and the pond on White Pines Golf Course. This sewer is surcharged during the 10% exceedance probability storm with some surface flooding at Entry Drive and Bernice Drive. For the 4% exceedance storm, the ponding is deeper at Entry Drive and Bernice Drive and there is some overland flow in Entry Drive toward the pond on White Pines Golf Course.

Alternative Studied

The proposed improvement for this area is the replacement of the sewers in Entry Drive from Bernice Drive to the pond on White Pines Golf Course. The proposed sewers were sized for the 10% exceedance probability storm. The proposed sewers will convey the 4% exceedance probability storm without surface ponding or overland flow. See Exhibit O for the proposed alignment and sewer sizes.

Problem Area A4

Description

Problem Area A4 is north of 3rd Avenue/Jefferson Street between Illinois 83 and Ellis Street and along Hawthorne Avenue north of 2nd Court. The majority of this problem area is located in unincorporated areas. The sewer is surcharged for the 10% exceedance probability storm with some overland flow occurring. The overland flow paths are in this area are ill-defined and most likely consist of a series of depressions that fill and then spill over to the next depression. The general overland flow path is toward 3rd Avenue/Jefferson Street and Tributary No. 2 in White Pines Golf Course.

Alternative Studied

The proposed improvement for this area consists of a new sewer along 3rd Avenue from Illinois 83 to Ellis Street, a new sewer from 2nd Court to 3rd Avenue, and a sewer replacement from 2nd Avenue to 2nd Court. This alternative will reduce the flow in the existing sewer in 2nd Court to eliminate surface ponding and

overland flow that occurs west of Hawthorne Avenue and in Hawthorne Avenue north of 2nd Court. The sewers were sized to for the 10% exceedance probability storm. The sewers will convey the 4% exceedance probability storm without surface ponding and overland flow. See Exhibit P for the proposed alignment and sewer sizes.

Problem Area A5

Description

Problem Area A5 is located along Tributary Nos. 2 and 3 in the apartment complex west of Redmond Reservoir between Red Oak Street and George Street and in the enclosed section of Tributary No. 3 under Jacquelyn Drive. A previous project by the Village of Bensenville that involved replacing several culverts under Red Oak Street and within the apartment complex solved some of the flooding problems in this area. The flooding problem is not that severe for the 10% exceedance probability storm event. The flooding problem in this area is more severe for the 1% exceedance probability 24 hour storm. For the 4% exceedance probability storm, there is surcharging in Jacquelyn Drive with flow in the street from York Road to George Street.

Alternatives Studied

Several alternatives were examined for flooding in the apartment complex and the overland flow in Jacquelyn Drive. All of the alternatives required significant storage volumes to adequately address the flooding problems. The only open area sufficiently large enough to reduce the water surface elevations significantly is on White Pines Golf Course. The improvements in Jacquelyn Drive require 17 acre-feet of storage somewhere upstream on Tributary No. 3 to mitigate stage increases downstream of the improvements within the apartment complex. A site large enough for a stormwater storage basin of this size would have significant impact on the golf course layout. A minimum of storage volume of 100 to 150 acre-feet would be required on Tributary No. 2 to significantly impact water surface elevations in the apartment complex. A site with sufficient storage volume on White Pines Golf Course would have significant impact on the golf course layout and may result in the loss of several holes. If storage was required on both Tributaries No. 2 and 3, White Pines would likely be reduce to a 27 hole course from the current 36 hole course.

Redmond Reservoir will overtop during the 1% exceedance probability 24 hour duration storm based on the XP-SWMM Modeling. The high water elevation is approximately 658 feet NAVD88. This is approximately 2 feet above the low point on the perimeter of the reservoir near the pump station on George Street. The volume of water above the low point on reservoir perimeter is approximately 80 to 100 acre-feet. The proposed storage alternatives on White Pines Golf Course would provide this much storage which would reduce the probability of overtopping Redmond Reservoir.

The alternatives examined for Problem Area A5 were all evaluated for the 1% exceedance probability 24 hour duration storm. There is not a significant flooding problem in the apartment complex during the 10% exceedance storm. Due to the lack of available locations to provide sufficient stormwater storage, a final alternative was not developed for this area. The preliminary locations and sewer improvements identified are shown in Exhibit Q.

Construction Cost Estimates

Methodology

The cost estimate represents year 2011 dollars (ENR December 2011 Index = 9172) and includes a 15 percent contractor's overhead and profit and a 30 percent contingency. Also included in the estimate was a 15% multiplier for utility relocation and a 2% multiplier for contractor bonding and insurance. This

opinion of probable cost was prepared using the 2011 RS-Means "Heavy Construction Cost Data" book, several estimates from local contractor's and manufacturers, and the bid tabs from the 2011 Northern Business District Reconstruction project. Future inflation is not included due to the unknown schedule of construction. Estimates include pavement removal and restoration costs.

It should be noted that the following costs were not included in the estimate:

- Obtaining and purchasing easements and/or properties
- Engineering and survey
- Remediation due to contaminated soil
- Detailed utility relocation costs

Also, the following assumptions were made:

- Abandoned sewers will be left in place rather than excavated and removed
- All storage facilities will be designed as dry detention basins
- Where existing sewers are being replaced, the existing catch basins and inlets will be reused rather than replaced
- Disposal costs assume a 40 mile round trip haul distance

Since AECOM has no control over the cost of labor, material or equipment, or general inflation, the Opinion of Probable Construction Costs has been prepared on the basis of experience and judgment of an engineering professional. AECOM cannot guarantee that the actual cost for the Project will not vary from the Opinion of Probable Cost prepared by AECOM.

Tables with the detailed opinions of probable construction costs are included in Attachment A.

Bensenville Ditch Watershed

The following table summarizes the opinions of probable construction costs for the six problem areas in the Bensenville Ditch watershed.

Bensenville Ditch Watershed Opinion of Probable Construction Cost Summary

Problem Area	Opinion of Probable Construction Cost	Attachment A Table Number
B1	$1,190,000	1
B2	$360,000	2
B3	$1,460,000	3
B4	$6,610,000	4
B5	$5,950,000	5
B6	$1,860,000	6

Addison Creek Watershed

Opinions of probable construction cost were prepared for Problem Areas A1, A2, A3, and A4 in the Addison Creek Watershed. An opinion of construction cost was prepared for the sewer replacement in Problem Area A5. This cost does not include the cost of 17 acre-feet of storage required upstream of

York Road to prevent increases in water surface elevations between George Street and Redmond Reservoir. The only likely site for stormwater storage upstream of York Road is on White Pines Golf Course. A construction cost for providing storage on White Pines Golf Course in Problem Area A5 was not prepared. This was due to the cost will be impacted significantly by the changes required in the golf course routing to accommodate the additional storage. Identifying changes in the golf course routing were outside the scope of the project and would require the assistance of a golf course design firm.

The following table summarizes the opinions of probable construction costs for the five problem areas in the Addison Creek Watershed.

Addison Creek Watershed Opinion of Probable Construction Cost Summary

Problem Area	Opinion of Probable Construction Cost	Attachment A Table Number
A1 Park Street	$6,890,000	7 and 8
A1 Evergreen Street	$8,800,000	9
A2	$920,000	10
A3	$750,000	11
A4	$2,970,000	12
A5	$1,270,000	13

Recommended Improvements

Bensenville Ditch Watershed

In the Bensenville Ditch watershed, there were six problem areas identified during the study. Each of the problem areas has one or more areas where surface ponding will occur for the 10% exceedance probability storm.

The recommended sewers in Problem Areas B1, B2 and B3 are projects that can be constructed independently from any other project and should be included in any future roadway reconstruction or major utility improvement projects in these areas.

The recommended project in Area B4 will require the most coordination with other entities. Additional optimization to better account for tradeoffs between performance, storage volume and developable land areas will likely be required during final planning and design. The use of underground storage may result in additional useful land space, but at a higher construction cost. Drainage improvements on the west side of Fenton High School not tributary to the possible underground detention basin under the football stadium will need to be coordinated with the construction of the stormwater storage basins proposed on either side of Illinois Route 83 and south of Irving Park Road. These stormwater storage basins are located in an area being studied for in-fill residential revitalization in another portion of this study. The outlet sewer is also located within this revitalization area. The existing sewers in Irving Park Road do not have sufficient capacity for any additional flow. The existing flow from this area is restricted by the capacity of the sewers in Irving Park Road.

The recommended project in Problem Area B5 will require coordination with the school district on when Mohawk School is closed. The school property is the site of the stormwater storage for this project.

The recommended sewers in Problem Area B6 provide relief from surcharged conditions in the sewers for the 10% exceedance probability storm. This project should probably be included with any future roadway resurfacing/reconstruction involving these streets.

Addison Creek Watershed

In the Addison Creek watershed, there were five problem areas identified during the study. Of these five problem areas, Problem Area A1 has the most significant flooding problem. The area around Wood Avenue and Addison and Center Streets experiences frequent street flooding with some damage to homes in the area. Two alternatives were studied to solve the problem with the primary difference between the alternatives is the location of the sewer outfall.

Problem Areas A2 and A3 have sewers that do not have sufficient capacity for the 10% exceedance probability storm without minor street flooding occurring. The improvements in these two areas should be included with any future street resurfacing/reconstruction projects.

The surface flooding in Problem Area A4 impacts the unincorporated area adjacent to the Village of Bensenville. The recommended project would reduce street flooding along Hawthorne Avenue within the Village limits. These improvements should be considered if this area is annexed into the Village or when 3rd Avenue/Jefferson Street is reconstructed.

The flooding in Problem Area A5 occurs during the less frequent very large storm events. Recent culvert replacements have addressed the more frequent flooding problems in this area. The primary solution to flooding in this area is the addition of more stormwater storage. The only open areas in the watershed with adequate space to construct the volume required are on the Bensenville Park District's White Pines Golf Course. Providing additional stormwater storage on White Pines Golf Course would have significant impacts to the current layout of the golf course and would likely result in the reduction of the number of holes. The one sewer improvement studied in Jacquelyn Drive for this area requires additional stormwater storage to be constructed upstream to prevent increased stages between George Street and the Redmond Reservoir. For these reasons, there is not a recommended solution to the flooding within this area.

Conclusions

The results of the stormwater study have identified nine areas within the Village of Bensenville where the existing stormwater conveyance system capacity is inadequate to convey the 10% exceedance probability storm without surface flooding. There is one additional area where the conveyance system is inadequate to convey the 10% exceedance storm without surcharging. There is an area immediately west of Redmond Reservoir where the existing network of open channels and culverts is inadequate to convey the 1% exceedance probability storm without overbank flooding. Solutions have been recommended for ten of the areas. These solutions involve a combination of sewer replacements and stormwater storage basins. Problem Area A1 located near Wood Avenue and Addison and Center Streets is probably the most severe problem area in the Village and should be given the highest priority of the projects for implementation. Several of the projects, such as Problem Areas A2, A3, B1, B2, B3 and B6 should be implemented when these streets are resurfaced or reconstructed or when other major utility improvements occur. The recommended projects in Problem Areas B4 and B5 will require coordination with other organizations for scheduling.

The overbank flooding area adjacent to Redmond Reservoir did not have a recommended solution. A solution was not recommended since an area of sufficient size was not available to construct the amount of stormwater storage required to address the problem. If the Bensenville Park District decides to make changes to the White Pines Golf Course in the future, the opportunity to construct stormwater storage on this site should be investigated. Construction of additional stormwater storage on White Pines Golf

Course would restore the original design capacity of Redmond Reservoir to the 1% exceedance probability storm. The reservoir currently will overtop the top of the reservoir in the vicinity of the pump station along George Street during the 1% exceedance probability 24-hour duration storm.

Potential Funding Sources

Potential outside funding sources for the types of drainage issues addressed in this report are very limited. Federal and State funding typically address larger regional flooding issues. Several of the projects are recommended to be performed in conjunction with road reconstruction projects which may be eligible for funding at the state level.

Establishing a Stormwater Utility to develop a dedicated revenue stream for addressing drainage and flooding problems has been used in numerous communities. A stormwater utility operates similar to an electric, water, or wastewater utility in that they collect a fee for services. In addition to funding capital improvements, stormwater utilities are also frequently used for stormwater system cleaning, stormwater system televising, street sweeping, existing infrastructure repairs, ditch grading and mowing, and detention facility maintenance.

There are at least nine Illinois communities with stormwater utilities and numerous other communities are considering implementation of a stormwater utility. The DuPage County Stormwater Management Division (DCSM) is not technically a stormwater utility as it currently funds stormwater programs and operations through a percentage of property taxes. Most stormwater utilities collect funds based on total land area, impervious area and other factors. Successful stormwater utilities establish policies that enable each resident or property owner to pay an equitable share proportional to the amount of stormwater runoff that is generated from their property.

ATTACHMENT A

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST

Table 1
Proposed Improvements - Problem Area B1
Engineer's Opinion of Probable Construction Cost

Description	Units	Quantity	Unit Cost	Cost
RCP Circular Sewers				
30-inch	LF	700	$ 101	$ 70,700
36-inch	LF	150	$ 123	$ 18,450
42-inch	LF	1420	$ 156	$ 221,520
Structures				
IDOT 5' Standard Manhole	EA	10	$ 5,000	$ 50,000
Inlets with frame and grate	EA	11	$ 1,250	$ 13,750
42" Flared End Section with grate	EA	1	$ 1,429	$ 1,429
Excavation and Trenching				
Trench Excavation	CY	3,279	$ 5	$ 16,396
Hauling away of spoil (1.4x excavation under pavement and/or detention basins)	CY	4,551	$ 19	$ 86,468
CA-6 backfill and bedding (including hauling)	CY	2,607	$ 28	$ 72,995
Compaction	CY	3,279	$ 2	$ 6,558
Pavement Removal, Restoration, etc.				
Saw cutting of asphalt pavement	LF	3,180	$ 5	$ 15,900
Pavement Removal	SY	2,116	$ 8	$ 16,930
Hauling away of pavement (1.4x Pavement Removal)	SY	2,963	$ 9	$ 26,665
Pavement Restoration	SY	2,116	$ 45	$ 95,232
Seeding and Topsoil	SY	44	$ 4	$ 178
Other Construction Items				
Traffic Control	LS	1	$ 15,000	$ 15,000
Erosion control	LF	100	$ 2	$ 200
Mobilization and Demobilization	LS	1	$ 3,000	$ 3,000
			Subtotal	$ 731,371
Other				
Contractor Bonding and Insurance (2%)				$ 14,627
Utility Relocation (15%)				$ 109,706
Contractor O&P (15%)				$ 109,706
Contingency (30%)				$ 219,411
			TOTAL	$ 1,190,000

Table 2
Proposed Improvements - Problem Area B2
Engineer's Opinion of Probable Construction Cost

Description	Units	Quantity	Unit Cost	Cost
RCP Circular Sewers				
48-inch	LF	446	$ 184	$ 82,064
Structures				
IDOT 6' Standard Manhole	EA	2	$ 9,200	$ 18,400
Excavation and Trenching				
Trench Excavation	CY	1,132	$ 5	$ 5,661
Hauling away of spoil (1.4x excavation under pavement and/or detention basins)	CY	1,585	$ 19	$ 30,119
CA-6 backfill and bedding (including hauling)	CY	924	$ 28	$ 25,885
Compaction	CY	1,132	$ 2	$ 2,265
Pavement Removal, Restoration, etc.				
Saw cutting of asphalt pavement	LF	892	$ 5	$ 4,460
Pavement Removal	SY	496	$ 8	$ 3,964
ing away of pavement (1.4x Pavement Removal)	SY	694	$ 9	$ 6,243
Pavement Restoration	SY	496	$ 45	$ 22,298
Other Construction Items				
Traffic Control	LS	1	$ 15,000	$ 15,000
Mobilization and Demobilization	LS	1	$ 3,000	$ 3,000
			Subtotal	$ 219,360
Other				
Contractor Bonding and Insurance (2%)				$ 4,387
Utility Relocation (15%)				$ 32,904
Contractor O&P (15%)				$ 32,904
Contingency (30%)				$ 65,808
			TOTAL	$ 360,000

Table 3
Proposed Improvements - Problem Area B3
Engineer's Opinion of Probable Construction Cost

Description	Units	Quantity	Unit Cost	Cost
RCP Circular Sewers				
36-inch	LF	1270	$ 123	$ 156,210
42-inch	LF	160	$ 156	$ 24,960
RCP Ellipitical Sewers				
38-inch x 60-inch	LF	400	$ 274	$ 109,600
Sewer Boring and Tunneling				
42-inch RCP sewer in 60-inch casing pipe	LF	100	$ 1,256	$ 125,600
Structures				
IDOT 5' Standard Manhole	EA	7	$ 5,000	$ 35,000
Inlets with frame and grate	EA	6	$ 1,250	$ 7,500
38"x 60" Flared End Section with grate	EA	1	$ 2,411	$ 2,411
Excavation and Trenching				
Trench Excavation	CY	2,463	$ 5	$ 12,317
Excavation for jacking and receiving pits	CY	325	$ 14	$ 4,544
Sheeting for jacking and receiving pits	SF	2,814	$ 50	$ 140,700
Dewatering of jacking and receiving pits	LS	1	$ 2,000	$ 2,000
Hauling away of spoil (1.4x excavation under pavement and/or detention basins)	CY	3,683	$ 19	$ 69,981
CA-6 backfill and bedding (including hauling)	CY	2,253	$ 28	$ 63,077
Compaction	CY	2,463	$ 2	$ 4,927
Pavement Removal, Restoration, etc.				
Saw cutting of asphalt pavement	LF	2860	$ 5	$ 14,300
Pavement Removal	SY	1,393	$ 8	$ 11,142
Hauling away of pavement (1.4x Pavement Removal)	SY	1,950	$ 9	$ 17,549
Pavement Restoration	SY	1,393	$ 45	$ 62,676
Seeding and Topsoil	SY	489	$ 4	$ 1,955
Concrete Sidewalk	SF	2,000	$ 5	$ 10,000
Other Construction Items				
Traffic Control	LS	1	$ 15,000	$ 15,000
Erosion control	LF	800	$ 2	$ 1,600
Mobilization and Demobilization	LS	1	$ 3,000	$ 3,000
			Subtotal	$ 896,052
Other				
Contractor Bonding and Insurance (2%)				$ 17,921
Utility Relocation (15%)				$ 134,408
Contractor O&P (15%)				$ 134,408
Contingency (30%)				$ 268,816
			TOTAL	$ 1,460,000

Table 4
Proposed Improvements - Problem Area B4
Engineer's Opinion of Probable Construction Cost

Description	Units	Quantity	Unit Cost	Cost
RCP Circular Sewers				
24-inch	LF	665	$ 50	$ 33,250
30-inch	LF	1075	$ 101	$ 108,575
42-inch	LF	1600	$ 156	$ 249,600
54-inch	LF	100	$ 224	$ 22,400
60-inch	LF	2050	$ 244	$ 500,200
Sewer Boring and Tunneling				
42-inch RCP sewer in 60-inch casing pipe	LF	300	$ 1,256	$ 376,800
54-inch RCP sewer in 72-inch casing pipe	LF	100	$ 2,360	$ 236,000
Structures				
IDOT 5' Standard Manhole	EA	5	$ 5,000	$ 25,000
IDOT 6' Standard Manhole	EA	10	$ 9,200	$ 92,000
Inlets with frame and grate	EA	6	$ 1,250	$ 7,500
Weir structure with grate	EA	3	$ 11,000	$ 33,000
24" Flared End Section with grate	EA	1	$ 705	$ 705
30" Flared End Section with grate	EA	1	$ 800	$ 800
42" Flared End Section with grate	EA	2	$ 1,429	$ 2,858
54" Flared End Section with grate	EA	1	$ 2,761	$ 2,761
60" Flared End Section with grate	EA	1	$ 4,471	$ 4,471
Excavation and Trenching				
Trench Excavation	CY	12,161	$ 5	$ 60,804
Excavation for jacking and receiving pits	CY	603	$ 14	$ 8,439
Sheeting for jacking and receiving pits	SF	2,568	$ 50	$ 128,400
Dewatering of jacking and receiving pits	LS	1	$ 2,000	$ 2,000
Hauling away of spoil (1.4x excavation under pavement and/or detention basins)	CY	71,712	$ 19	$ 1,362,527
CA-6 backfill and bedding (including hauling)	CY	2,602	$ 28	$ 72,845
Compaction	CY	12,764	$ 2	$ 25,527
Detention basin excavation	CY	47,271	$ 3	$ 141,812
Pavement Removal, Restoration, etc.				
Saw cutting of asphalt pavement	LF	2300	$ 5	$ 11,500
Pavement Removal	SY	1,380	$ 8	$ 11,043
ng away of pavement (1.4x Pavement Removal)	SY	1,933	$ 9	$ 17,393
Pavement Restoration	SY	1,380	$ 45	$ 62,118
Seeding and Topsoil	SY	24,822	$ 4	$ 99,288
Demolition of Warehouse	LS	1	$ 250,000	$ 250,000
Other Construction Items				
Traffic Control	LS	1	$ 15,000	$ 15,000
Erosion control	LF	11652	$ 2	$ 23,304
Mobilization and Demobilization	LS	1	$ 3,000	$ 3,000
Fencing for Detention Basins	LF	2600	$ 33	$ 85,800
			Subtotal	$ 4,076,721
Other				
Contractor Bonding and Insurance (2%)				$ 81,534
Utility Relocation (15%)				$ 611,508
Contractor O&P (15%)				$ 611,508
Contingency (30%)				$ 1,223,016
			TOTAL	$ 6,610,000

Table 5
Proposed Improvements - Problem Area B5
Engineer's Opinion of Probable Construction Cost

Description	Units	Quantity	Unit Cost	Cost
RCP Circular Sewers				
24-inch	LF	780	$ 50	$ 39,000
36-inch	LF	750	$ 123	$ 92,250
42-inch	LF	4080	$ 156	$ 636,480
Sewer Boring and Tunneling				
42-inch RCP sewer in 60-inch casing pipe	LF	150	$ 1,256	$ 188,400
Structures				
IDOT 5' Standard Manhole	EA	17	$ 5,000	$ 85,000
Inlets with frame and grate	EA	6	$ 1,250	$ 7,500
Weir structure with grate	EA	1	$ 11,000	$ 11,000
42" Flared End Section with grate	EA	2	$ 1,429	$ 2,858
Backflow Prevention Device	EA	1	$ 30,000	$ 30,000
Excavation and Trenching				
Trench Excavation	CY	13,625	$ 5	$ 68,123
Excavation for jacking and receiving pits	CY	349	$ 14	$ 4,883
Sheeting for jacking and receiving pits	SF	3,315	$ 50	$ 165,750
Dewatering of jacking and receiving pits	LS	1	$ 2,000	$ 2,000
Hauling away of spoil (1.4x excavation under pavement and/or detention basins)	CY	34,569	$ 19	$ 656,818
CA-6 backfill and bedding (including hauling)	CY	12,495	$ 28	$ 349,866
Compaction	CY	13,625	$ 2	$ 27,249
Detention basin excavation	CY	10,890	$ 3	$ 32,670
Pavement Removal, Restoration, etc.				
Saw cutting of asphalt pavement	LF	10620	$ 5	$ 53,100
Pavement Removal	SY	5,435	$ 8	$ 43,481
Hauling away of pavement (1.4x Pavement Removal)	SY	7,609	$ 9	$ 68,482
Pavement Restoration	SY	5,435	$ 45	$ 244,580
Seeding and Topsoil	SY	9,544	$ 4	$ 38,175
Demolition of Elementary School Building	LS	1	$800,000	$ 800,000
Other Construction Items				
Traffic Control	LS	1	$ 15,000	$ 15,000
Erosion control	LF	3100	$ 2	$ 6,200
Mobilization and Demobilization	LS	1	$ 3,000	$ 3,000
			Subtotal	$ 3,671,865
Other				
Contractor Bonding and Insurance (2%)				$ 73,437
Utility Relocation (15%)				$ 550,780
Contractor O&P (15%)				$ 550,780
Contingency (30%)				$ 1,101,559
			TOTAL	$ 5,950,000

Table 6
Proposed Improvements - Problem Area B6
Engineer's Opinion of Probable Construction Cost

Description	Units	Quantity	Unit Cost	Cost
RCP Circular Sewers				
36-inch	LF	320	$ 123	$ 39,360
42-inch	LF	1200	$ 156	$ 187,200
48-inch	LF	608	$ 184	$ 111,872
Sewer Boring and Tunneling				
42-inch RCP sewer in 60-inch casing pipe	LF	200	$ 1,256	$ 251,200
Structures				
IDOT 5' Standard Manhole	EA	7	$ 5,000	$ 35,000
IDOT 6' Standard Manhole	EA	3	$ 9,200	$ 27,600
42" Flared End Section with grate	EA	1	$ 1,429	$ 1,429
38"x 60" Flared End Section with grate	EA	1	$ 2,411	$ 2,411
Excavation and Trenching				
Trench Excavation	CY	3,896	$ 5	$ 19,481
Excavation for jacking and receiving pits	CY	164	$ 14	$ 2,298
Sheeting for jacking and receiving pits	SF	1,608	$ 50	$ 80,400
Dewatering of jacking and receiving pits	LS	1	$ 2,000	$ 2,000
Hauling away of spoil (1.4x excavation under pavement and/or detention basins)	CY	5,594	$ 19	$ 106,283
CA-6 backfill and bedding (including hauling)	CY	3,097	$ 28	$ 86,707
Compaction	CY	4,060	$ 2	$ 8,121
Pavement Removal, Restoration, etc.				
Saw cutting of asphalt pavement	LF	4136	$ 5	$ 20,680
Pavement Removal	SY	2,199	$ 8	$ 17,595
Hauling away of pavement (1.4x Pavement Removal)	SY	3,079	$ 9	$ 27,712
Pavement Restoration	SY	2,199	$ 45	$ 98,970
Seeding and Topsoil	SY	63	$ 4	$ 253
Other Construction Items				
Traffic Control	LS	1	$ 15,000	$ 15,000
Erosion control	LF	120	$ 2	$ 240
Mobilization and Demobilization	LS	1	$ 3,000	$ 3,000
			Subtotal	$1,144,810
Other				
Contractor Bonding and Insurance (2%)				$ 22,896
Utility Relocation (15%)				$ 171,722
Contractor O&P (15%)				$ 171,722
Contingency (30%)				$ 343,443
			TOTAL	$1,860,000

Table 7
Proposed Improvements - Problem Area A1
Engineer's Opinion of Probable Construction Cost

Description	Units	Quantity	Unit Cost	Cost
RCP Circular Sewers				
12-inch	LF	500	$ 24	$ 12,000
24-inch	LF	170	$ 50	$ 8,500
30-inch	LF	570	$ 101	$ 57,570
36-inch	LF	1120	$ 123	$ 137,760
42-inch	LF	230	$ 156	$ 35,880
48-inch	LF	1980	$ 184	$ 364,320
60-inch	LF	730	$ 244	$ 178,120
Box Culvert Sewers				
4Hx8W Box Culvert	LF	1160	$ 313	$ 363,080
Sewer Tunneling and Boring				
48-inch RCP sewer in 66-inch casing pipe	LF	70	$ 1,425	$ 99,750
Structures				
IDOT 5' Standard Manhole	EA	15	$ 5,000	$ 75,000
IDOT 6' Standard Manhole	EA	15	$ 9,200	$ 138,000
Special Manhole	EA	4	$ 10,000	$ 40,000
Inlets with frame and grate	EA	72	$ 1,250	$ 90,000
24" Flared End Section with grate	EA	2	$ 705	$ 1,410
36" Flared End Section with grate	EA	1	$ 1,015	$ 1,015
54" Flared End Section with grate	EA	1	$ 2,761	$ 2,761
Weir structure with grate	EA	1	$ 11,000	$ 11,000
Excavation and Trenching				
Trench Excavation	CY	20,862	$ 5	$ 104,311
Excavation for jacking and receiving pits	CY	267	$ 14	$ 3,734
Sheeting for jacking and receiving pits	SF	2,535	$ 50	$ 126,750
Dewatering of jacking and receiving pits	LS	1	$ 2,000	$ 2,000
Hauling away of spoil (1.4x excavation under pavement and/or detention basins)	CY	26,582	$ 19	$ 505,062
CA-6 backfill and bedding (including hauling)	CY	16,530	$ 28	$ 462,841
Compaction	CY	21,129	$ 2	$ 42,258
Pavement Removal, Restoration, etc.				
Saw cutting of asphalt pavement	LF	12,520	$ 5	$ 62,600
Pavement Removal	SY	7,394	$ 8	$ 59,156
Hauling away of pavement (1.4x Pavement Removal)	SY	10,352	$ 9	$ 93,171
Pavement Restoration	SY	7,394	$ 45	$ 332,752
Seeding and Topsoil	SY	1,088	$ 4	$ 4,351
Concrete Sidewalk	SF	1,700	$ 5	$ 8,500
Other Construction Items				
Traffic Control	LS	1	$ 15,000	$ 15,000
Erosion control	LF	1640	$ 2	$ 3,280
Mobilization and Demobilization	LS	1	$ 3,000	$ 3,000
			Subtotal	$ 3,444,932
Other				
Contractor Bonding and Insurance (2%)				$ 68,899
Utility Relocation (15%)				$ 516,740
Contractor O&P (15%)				$ 516,740
Contingency (30%)				$ 1,033,480
			TOTAL	$ 5,590,000

Table 8
Proposed Improvements - Problem Area A1 - Detention Basins
Engineer's Opinion of Probable Construction Cost

Description	Units	Quantity	Unit Cost	Cost
Excavation and Trenching				
Hauling away of spoil (1.4x excavation under pavement and/or detention basins)	CY	25,900	$ 19	$ 492,100
Detention basin excavation	CY	18,500	$ 3	$ 55,500
Pavement Removal, Restoration, etc.				
Seeding and Topsoil	SY	10,078	$ 4	$ 40,311
Concrete Sidewalk	SF	560	$ 5	$ 2,800
Demolition of two (2) single-family homes (including garage)	LS	1	$ 155,000	$ 155,000
Baseball Field Relocation	LS	1	$ 29,000	$ 29,000
Other Construction Items				
Traffic Control	LS	1	$ 15,000	$ 15,000
Erosion control	LF	2000	$ 2	$ 4,000
Mobilization and Demobilization	LS	1	$ 3,000	$ 3,000
			Subtotal	$ 796,711
Other				
Contractor Bonding and Insurance (2%)				$ 15,934
Utility Relocation (15%)				$ 119,507
Contractor O&P (15%)				$ 119,507
Contingency (30%)				$ 239,013
			TOTAL	$ 1,300,000

Table 9
Proposed Improvements - Problem Area A1 - Alternative in Evergreen
Engineer's Opinion of Probable Construction Cost

Description	Units	Quantity	Unit Cost	Cost
RCP Circular Sewers				
24-inch	LF	120	$ 50	$ 6,000
30-inch	LF	570	$ 101	$ 57,570
36-inch	LF	1690	$ 123	$ 207,870
42-inch	LF	230	$ 156	$ 35,880
48-inch	LF	1310	$ 184	$ 241,040
54-inch	LF	2950	$ 224	$ 660,800
66-inch	LF	1230	$ 306	$ 376,380
Sewer Boring and Tunneling				
48-inch RCP sewer in 66-inch casing pipe	LF	70	$ 1,425	$ 99,750
66-inch RCP sewer in 90-inch casing pipe	LF	70	$ 3,405	$ 238,350
Structures				
IDOT 5' Standard Manhole	EA	13	$ 5,000	$ 65,000
IDOT 6' Standard Manhole	EA	23	$ 9,200	$ 211,600
Inlets with frame and grate	EA	74	$ 1,250	$ 92,500
Spillway	EA	1	$ 85,000	$ 85,000
24" Flared End Section with grate	EA	1	$ 705	$ 705
Excavation and Trenching				
Trench Excavation	CY	35,705	$ 5	$ 178,527
Excavation for jacking and receiving pits	CY	759	$ 14	$ 10,629
Sheeting for jacking and receiving pits	SF	7,215	$ 50	$ 360,750
Dewatering of jacking and receiving pits	LS	1	$ 2,000	$ 2,000
Hauling away of spoil (1.4x excavation under pavement and/or detention basins)	CY	46,485	$ 19	$ 883,221
CA-6 backfill and bedding (including hauling)	CY	30,195	$ 28	$ 845,466
Compaction	CY	36,465	$ 2	$ 72,929
Pavement Removal, Restoration, etc.				
Saw cutting of asphalt pavement	LF	15280	$ 5	$ 76,400
Pavement Removal	SY	8,950	$ 8	$ 71,599
Hauling away of pavement (1.4x Pavement Removal)	SY	12,530	$ 9	$ 112,768
Pavement Restoration	SY	8,950	$ 45	$ 402,743
Seeding and Topsoil	SY	545	$ 4	$ 2,180
Concrete Sidewalk	SF	1,700	$ 5	$ 8,500
Other Construction Items				
Traffic Control	LS	1	$ 15,000	$ 15,000
Erosion control	LF	920	$ 2	$ 1,840
Mobilization and Demobilization	LS	1	$ 3,000	$ 3,000
			Subtotal	$ 5,425,998
Other				
Contractor Bonding and Insurance (2%)				$ 108,520
Utility Relocation (15%)				$ 813,900
Contractor O&P (15%)				$ 813,900
Contingency (30%)				$ 1,627,799
			TOTAL	$ 8,800,000

Table 10
Proposed Improvements - Problem Area A2
Engineer's Opinion of Probable Construction Cost

Description	Units	Quantity	Unit Cost	Cost
RCP Circular Sewers				
30-inch	LF	340	$ 101	$ 34,340
36-inch	LF	1270	$ 123	$ 156,210
Structures				
IDOT 5' Standard Manhole	EA	6	$ 5,000	$ 30,000
Inlets with frame and grate	EA	18	$ 1,250	$ 22,500
Special Manhole	EA	1	$ 10,000	$ 10,000
Excavation and Trenching				
Trench Excavation	CY	2,948	$ 5	$ 14,739
Hauling away of spoil (1.4x excavation under pavement and/or detention basins)	CY	4,127	$ 19	$ 78,409
CA-6 backfill and bedding (including hauling)	CY	2,554	$ 28	$ 71,522
Compaction	CY	2,948	$ 2	$ 5,895
Pavement Removal, Restoration, etc.				
Saw cutting of asphalt pavement	LF	3,220	$ 5	$ 16,100
Pavement Removal	SY	1,591	$ 8	$ 12,728
Hauling away of pavement (1.4x Pavement Removal)	SY	2,227	$ 9	$ 20,046
Pavement Restoration	SY	1,591	$ 45	$ 71,593
Other Construction Items				
Traffic Control	LS	1	$ 15,000	$ 15,000
Mobilization and Demobilization	LS	1	$ 3,000	$ 3,000
			Subtotal	$ 562,083
Other				
Contractor Bonding and Insurance (2%)				$ 11,242
Utility Relocation (15%)				$ 84,312
Contractor O&P (15%)				$ 84,312
Contingency (30%)				$ 168,625
			TOTAL	$ 920,000

Table 11
Proposed Improvements - Problem Area A3
Engineer's Opinion of Probable Construction Cost

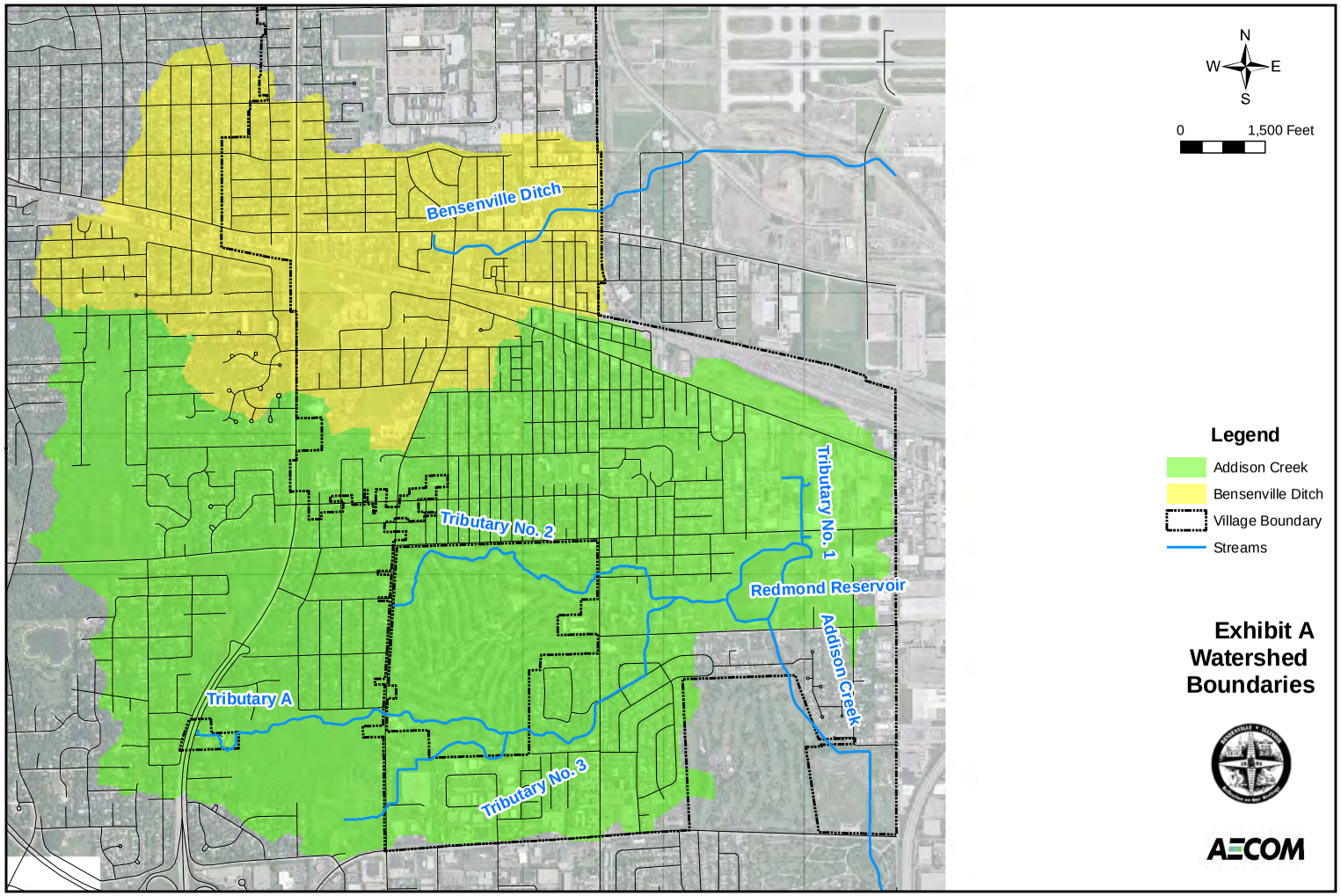
Description	Units	Quantity	Unit Cost	Cost
RCP Circular Sewers				
36-inch	LF	280	$ 123	$ 34,440
42-inch	LF	575	$ 156	$ 89,700
48-inch	LF	240	$ 184	$ 44,160
Structures				
IDOT 5' Standard Manhole	EA	4	$ 5,000	$ 20,000
IDOT 6' Standard Manhole	EA	1	$ 9,200	$ 9,200
Inlets with frame and grate	EA	15	$ 1,250	$ 18,750
48" Flared End Section with grate	EA	1	$ 1,674	$ 1,674
Excavation and Trenching				
Trench Excavation	CY	2,428	$ 5	$ 12,139
Hauling away of spoil (1.4x excavation under pavement and/or detention basins)	CY	3,399	$ 19	$ 64,578
CA-6 backfill and bedding (including hauling)	CY	2,038	$ 28	$ 57,050
Compaction	CY	2,428	$ 2	$ 4,855
Pavement Removal, Restoration, etc.				
Saw cutting of asphalt pavement	LF	2,190	$ 5	$ 10,950
Pavement Removal	SY	1,154	$ 8	$ 9,231
Hauling away of pavement (1.4x Pavement Removal)	SY	1,615	$ 9	$ 14,538
Pavement Restoration	SY	1,154	$ 45	$ 51,923
Other Construction Items				
Traffic Control	LS	1	$ 15,000	$ 15,000
Mobilization and Demobilization	LS	1	$ 3,000	$ 3,000
			Subtotal	$461,188
Other				
Contractor Bonding and Insurance (2%)				$ 9,224
Utility Relocation (15%)				$ 69,178
Contractor O&P (15%)				$ 69,178
Contingency (30%)				$138,356
			TOTAL	$750,000

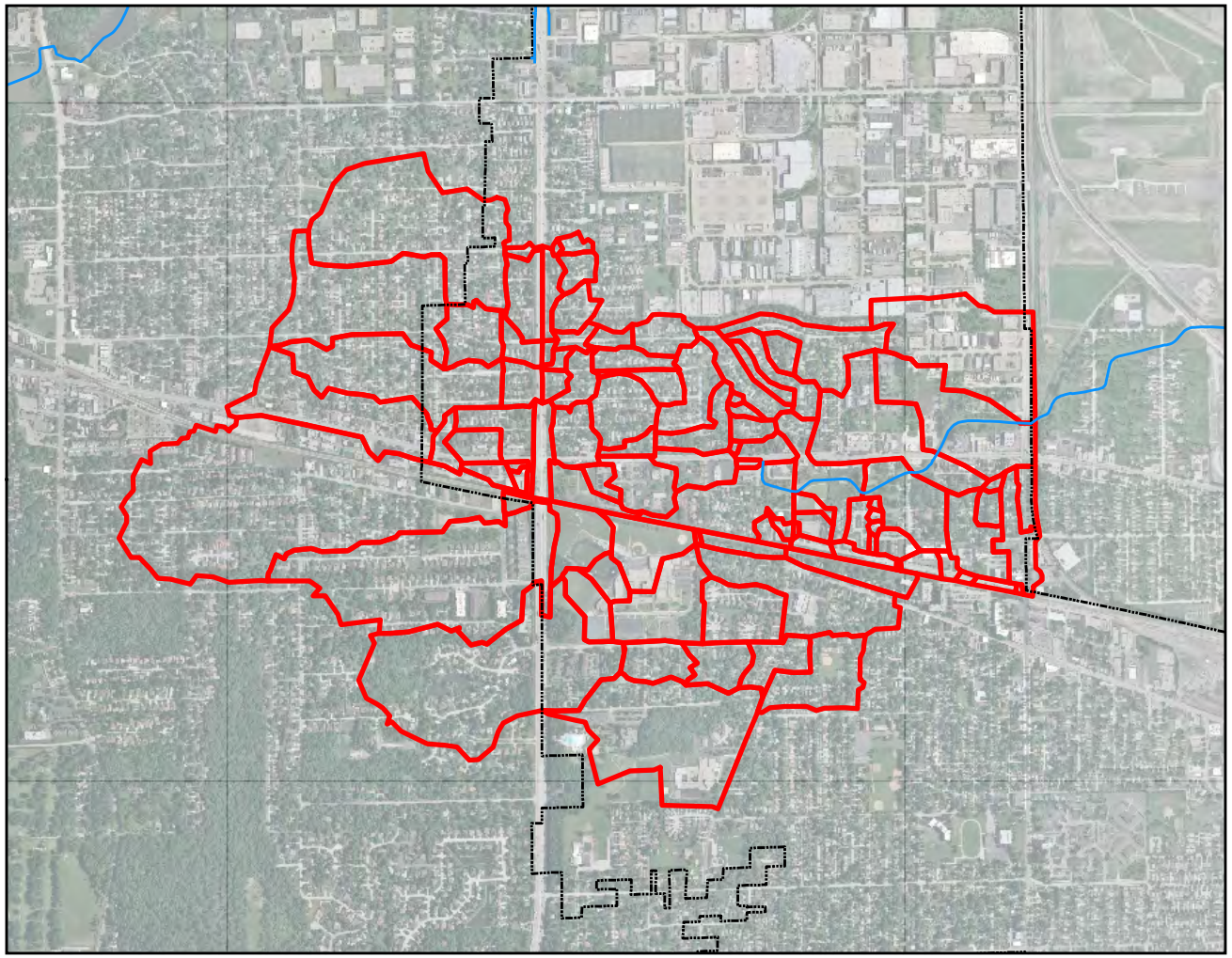
Table 12
Proposed Improvements - Problem Area A4
Engineer's Opinion of Probable Construction Cost

Description	Units	Quantity	Unit Cost	Cost
RCP Circular Sewers				
36-inch	LF	870	$ 123	$ 107,010
42-inch	LF	370	$ 156	$ 57,720
54-inch	LF	1170	$ 224	$ 262,080
72-inch	LF	600	$ 347	$ 208,200
Box Culvert Sewers				
4Hx8W Box Culvert	LF	90	$ 313	$ 28,170
4Hx6W Box Culvert	LF	490	$ 273	$ 133,770
Structures				
IDOT 5' Standard Manhole	EA	5	$ 5,000	$ 25,000
IDOT 6' Standard Manhole	EA	3	$ 9,200	$ 27,600
Special Manhole	EA	5	$ 10,000	$ 50,000
Inlets with frame and grate	EA	46	$ 1,250	$ 57,500
Excavation and Trenching				
Trench Excavation	CY	9,873	$ 5	$ 49,364
Hauling away of spoil (1.4x excavation under pavement and/or detention basins)	CY	13,741	$ 19	$ 261,074
CA-6 backfill and bedding (including hauling)	CY	7,654	$ 28	$ 214,311
Compaction	CY	9,873	$ 2	$ 19,745
Pavement Removal, Restoration, etc.				
Saw cutting of asphalt pavement	LF	7,090	$ 5	$ 35,450
Pavement Removal	SY	4,147	$ 8	$ 33,173
Hauling away of pavement (1.4x Pavement Removal)	SY	5,805	$ 9	$ 52,247
Pavement Restoration	SY	4,147	$ 45	$ 186,596
Seeding and Topsoil	SY	135	$ 4	$ 540
Other Construction Items				
Traffic Control	LS	1	$ 15,000	$ 15,000
Erosion control	LF	90	$ 2	$ 180
Mobilization and Demobilization	LS	1	$ 3,000	$ 3,000
			Subtotal	$1,827,729
Other				
Contractor Bonding and Insurance (2%)				$ 36,555
Utility Relocation (15%)				$ 274,159
Contractor O&P (15%)				$ 274,159
Contingency (30%)				$ 548,319
			TOTAL	$2,970,000

Table 13
Proposed Improvements - Problem Area A5
Engineer's Opinion of Probable Construction Cost

Description	Units	Quantity	Unit Cost	Cost
Box Culvert Sewers				
5Hx8W Box Culvert	LF	410	$ 358	$ 146,780
5Hx6W Box Culvert	LF	910	$ 333	$ 303,030
Structures				
Special Manhole	EA	5	$ 10,000	$ 50,000
Inlets with frame and grate	EA	10	$ 1,250	$ 12,500
Excavation and Trenching				
Trench Excavation	CY	3,968	$ 5	$ 19,842
Hauling away of spoil (1.4x excavation under pavement and/or detention basins)	CY	4,670	$ 19	$ 88,726
CA-6 backfill and bedding (including hauling)	CY	1,303	$ 28	$ 36,497
Compaction	CY	3,968	$ 2	$ 7,937
Pavement Removal, Restoration, etc.				
Saw cutting of asphalt pavement	LF	1,960	$ 5	$ 9,800
Pavement Removal	SY	1,318	$ 8	$ 10,544
Hauling away of pavement (1.4x Pavement Removal)	SY	1,845	$ 9	$ 16,607
Pavement Restoration	SY	1,318	$ 45	$ 59,311
Seeding and Topsoil	SY	510	$ 4	$ 2,040
Other Construction Items				
Traffic Control	LS	1	$ 15,000	$ 15,000
Erosion control	LF	680	$ 2	$ 1,360
Mobilization and Demobilization	LS	1	$ 3,000	$ 3,000
			Subtotal	$ 782,974
Other				
Contractor Bonding and Insurance (2%)				$ 15,659
Utility Relocation (15%)				$ 117,446
Contractor O&P (15%)				$ 117,446
Contingency (30%)				$ 234,892
			TOTAL	$ 1,270,000


N
W
E
S
0
1,500 Feet
Bensenville Ditch
Tributary No. 2
Tributary No. 1
Redmond Reservoir
Addison Creek
Tributary A
Tributary No. 3
Legend
Addison Creek
Bensenville Ditch
Village Boundary
Streams
Exhibit A
Watershed
Boundaries
AECOM



N
W E
S

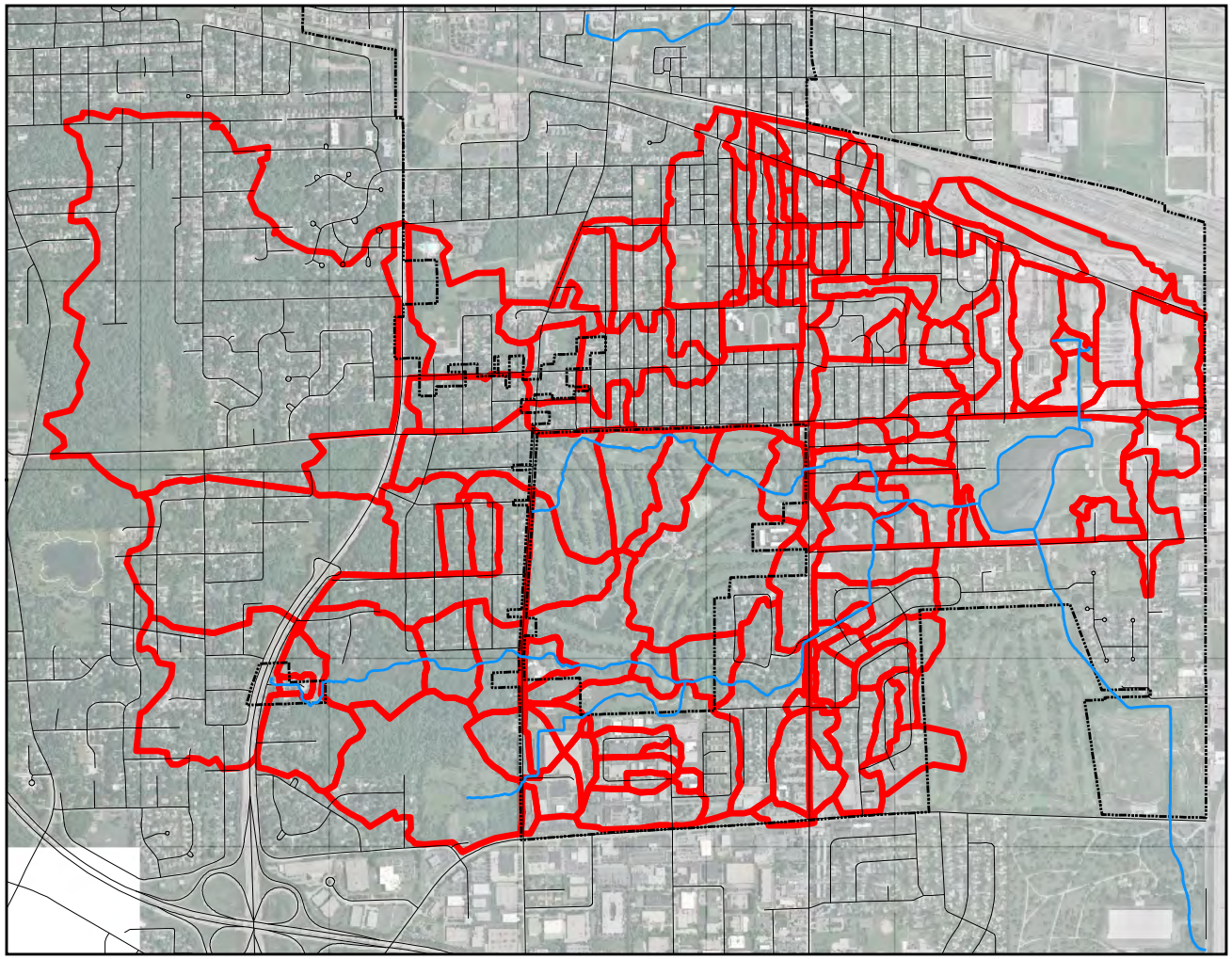
0 1,000 Feet

Legend

- Village Boundary
- Streams
- BD_Subbasins

Exhibit B
Bensenville Ditch Subbasins

AECOM



N
W E
S

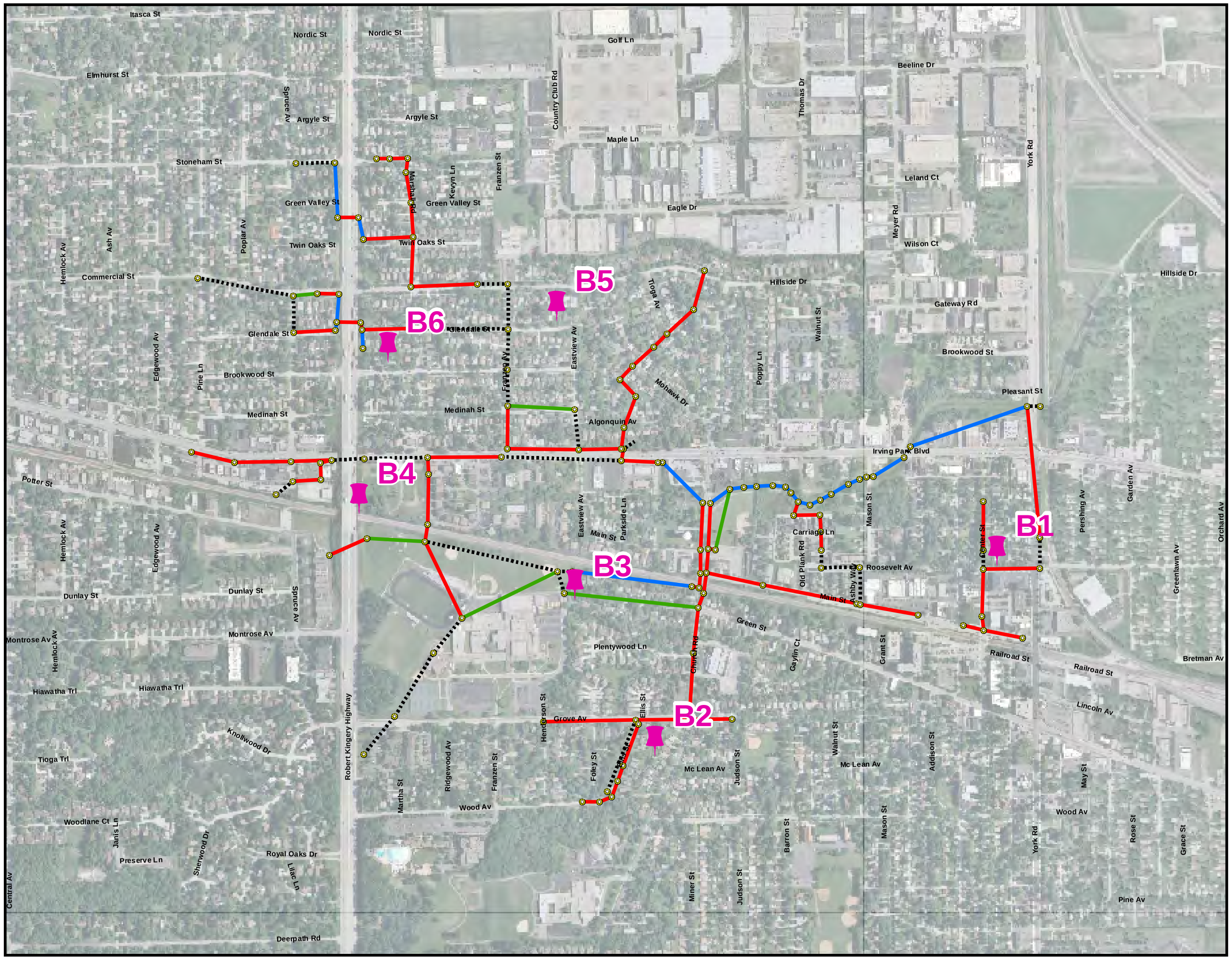
0 1,200 Feet

Legend

- Village Boundary
- Streams
- AC Subbasin

Exhibit C
Addison Creek Subbasins

AECOM



N
W E
S

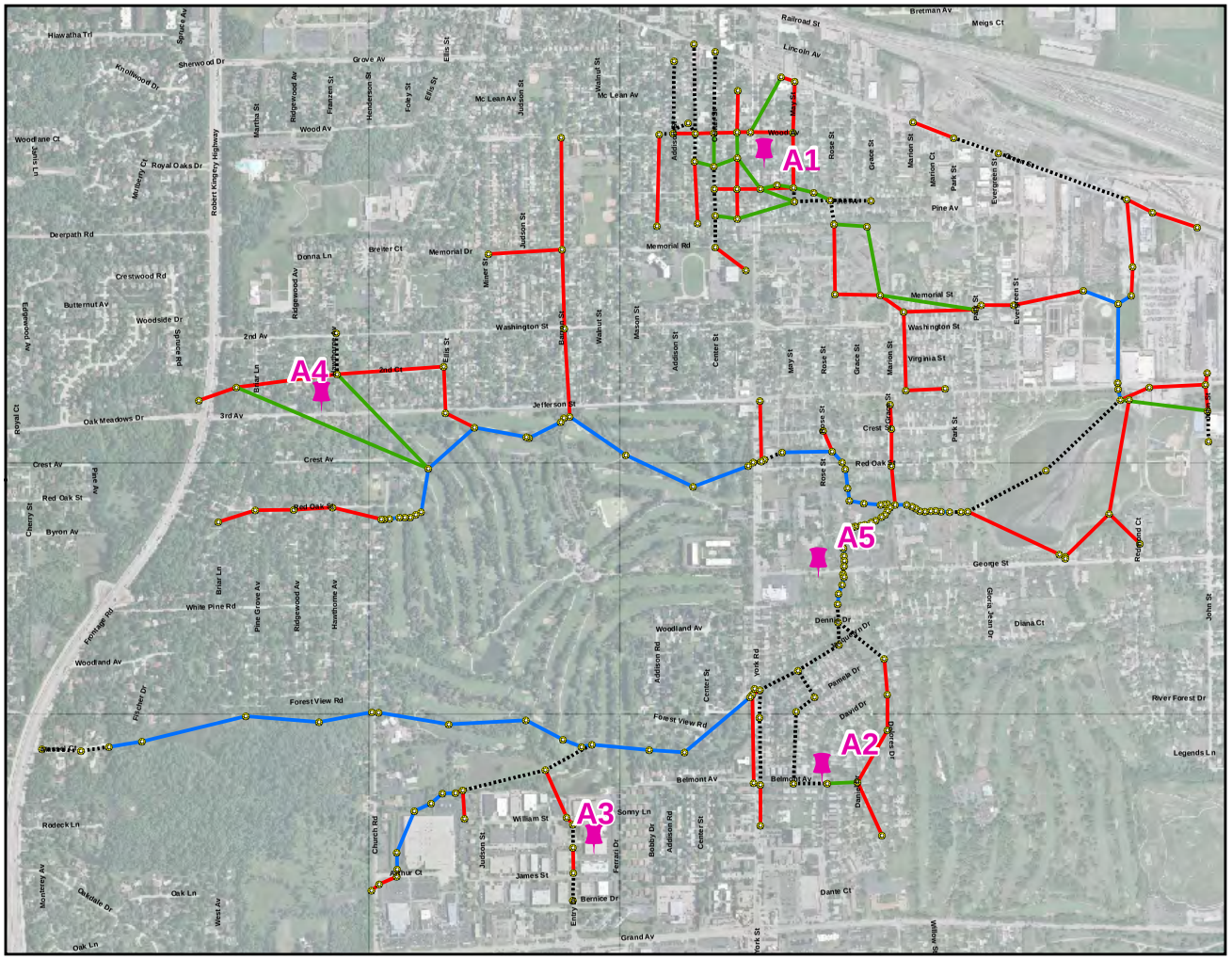
0 600 Feet

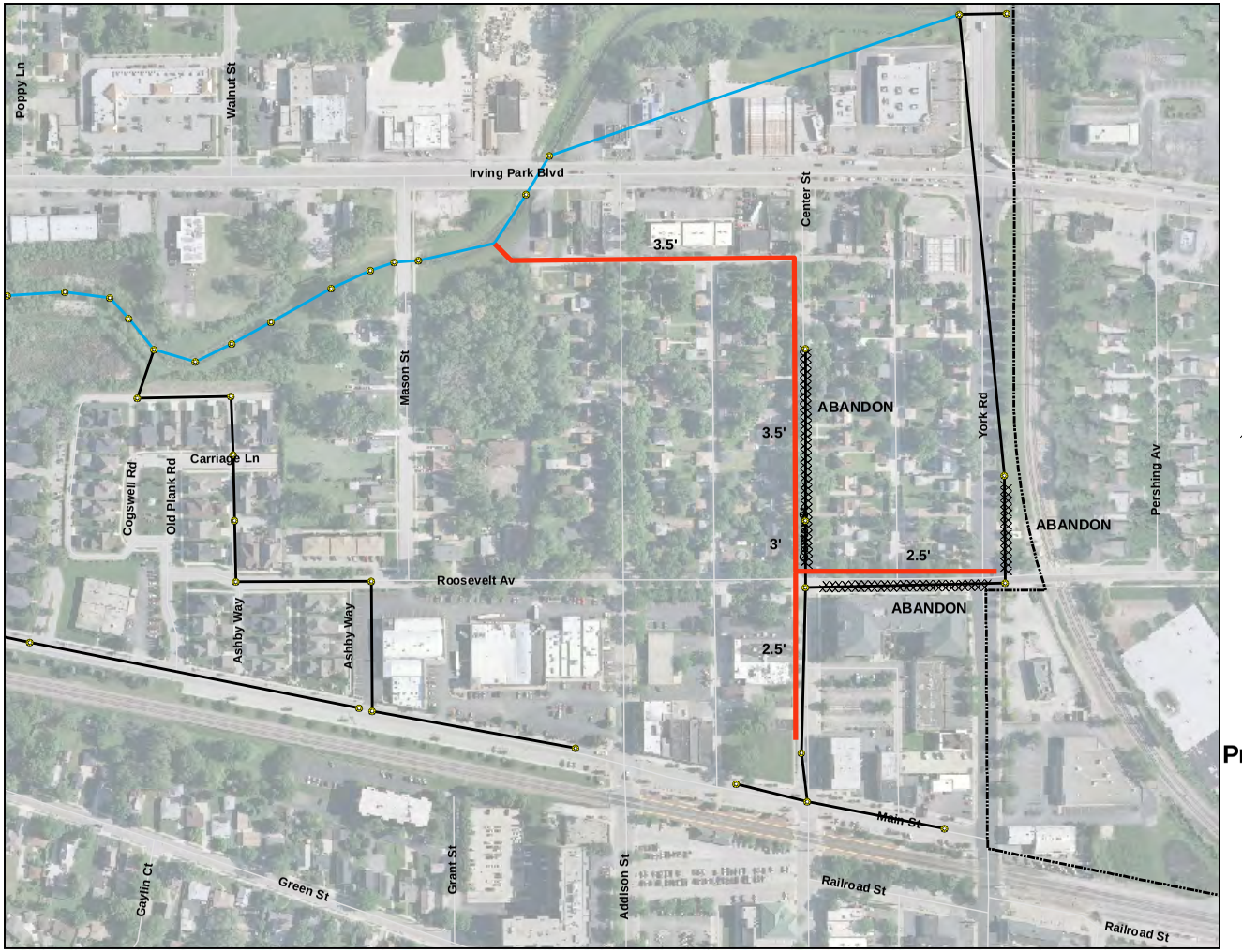
Legend

- Problem Areas
- Nodes
- CHANNEL
- PIPE
- OVERLAND
- PIPE & OVERLAND

Exhibit D Bensenville Ditch XPSWMM Schematic

AECOM


A1
A2
A3
A4
A5
Hiawatha Trl
Sherwood Dr
Grove Av
Knollwood Dr
Woodlane Ct
Royal Oaks Dr
Robert Kingsley Highway
Deerpath Rd
Crestwood Rd
Butternut Av
Woodside Dr
Donna Ln
Brener Ct
Memorial Dr
Wood Av
Mc Lean Av
Railroad St
Lincoln Av
Bretman Av
Meigs Ct
Memorial Rd
Memorial St
Washington St
Pine Av
Virginia St
Oak Meadows Dr
2nd Av
3rd Av
Crest Av
Red Oak St
Byron Av
Jefferson St
Oakwood Dr
Rose St
Grace St
Park St
Marion St
Marion Ct
Evergreen St
Evergreen Ct
Addison St
Center St
Walnut St
Mason St
Judson St
Miner St
Ellis St
Ridgewood Av
Franzen St
Henderson St
Foley St
Maple St
Spruce Av
Spruce Ln
Woodlane Ln
Monterey Ct
Briar Ln
Pine Grove Av
Hawthorne Av
White Pine Rd
Frontage Rd
Woodland Av
Fircher Dr
Forest View Rd
Oakwood Ct
Rodeck Ln
Monterey Av
Oakdale Dr
Oak Ln
West Av
Church Rd
Arthur Ct
William St
James St
Somy Ln
Ferrari Dr
Bobby Dr
Bernice Dr
Grand Av
Belmont Av
Addison Rd
York Rd
Pamela Dr
David Dr
Robert Dr
Diana Ct
Dane Ct
Legends Ln
River Forest Dr
George St
Denning Dr
Richard Ct
Cerro Jr Ln
John St
Willow St
Cherry St
Pine Av
Elgin Ct
Elmwood Av
Eastwood Av
Spruce Pl
Royal Ct
Mulberry Ct
Robert Kingsley Highway
Hiawatha Trl
Knollwood Dr
Woodlane Ct
Deerpath Rd
Crestwood Rd
Butternut Av
Woodside Dr
Donna Ln
Brener Ct
Memorial Dr
Wood Av
Mc Lean Av
Railroad St
Lincoln Av
Bretman Av
Meigs Ct
Memorial Rd
Memorial St
Washington St
Pine Av
Virginia St
Oak Meadows Dr
2nd Av
3rd Av
Crest Av
Red Oak St
Byron Av
Jefferson St
Oakwood Dr
Rose St
Grace St
Park St
Marion St
Marion Ct
Evergreen St
Evergreen Ct
Addison St
Center St
Walnut St
Mason St
Judson St
Miner St
Ellis St
Ridgewood Av
Franzen St
Henderson St
Foley St
Maple St
Spruce Av
Spruce Ln
Woodlane Ln
Monterey Ct
Briar Ln
Pine Grove Av
Hawthorne Av
White Pine Rd
Frontage Rd
Woodland Av
Fircher Dr
Forest View Rd
Oakwood Ct
Rodeck Ln
Monterey Av
Oakdale Dr
Oak Ln
West Av
Church Rd
Arthur Ct
William St
James St
Somy Ln
Ferrari Dr
Bobby Dr
Bernice Dr
Grand Av
Belmont Av
Addison Rd
York Rd
Pamela Dr
David Dr
Robert Dr
Diana Ct
Dane Ct
Legends Ln
River Forest Dr
George St
Denning Dr
Richard Ct
Cerro Jr Ln
John St
Willow St
Cherry St
Pine Av
Elgin Ct
Elmwood Av
Eastwood Av
Spruce Pl
Royal Ct
Mulberry Ct
N
W
E
S
0
900 Feet
Legend
Problem Areas
Nodes
CHANNEL
PIPE
OVERLAND
PIPE & OVERLAND
Exhibit E
Addison Creek XPSWMM Schematic
AECOM



N
W E
S

0 200 Feet

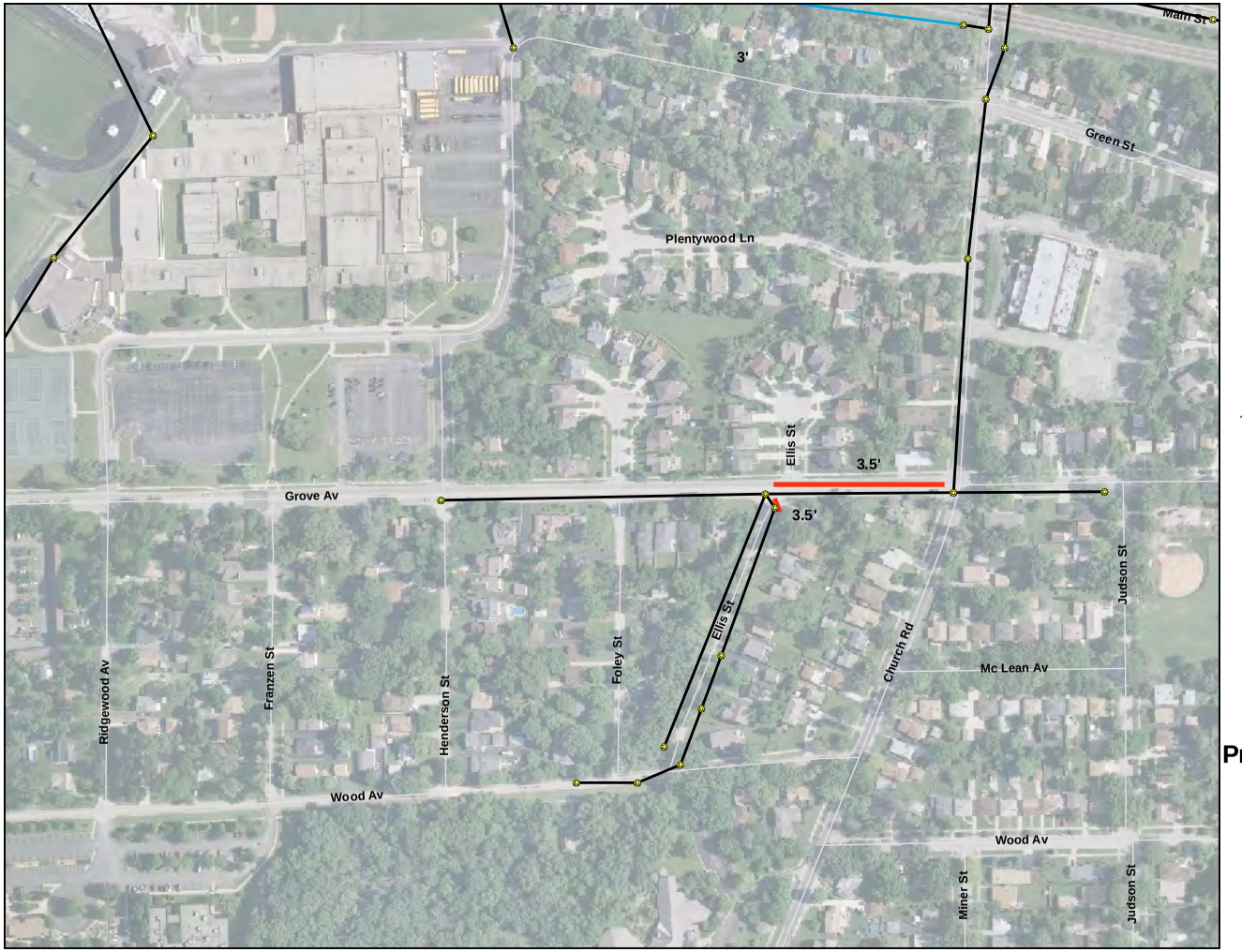
Legend

Proposed Improvements
- Circular Pipe
- Abandon

Existing XPSWWM Links
- OPEN CHANNEL
- PIPE
- Existing XPSWWM Nodes
- Village of Bensenville Boundary

Exhibit F
Problem Area B1

AECOM



N
W E
S

0 200 Feet

Legend

Proposed Improvements

Abandon

Circular Pipe

Existing XPSWWM Links

OPEN CHANNEL

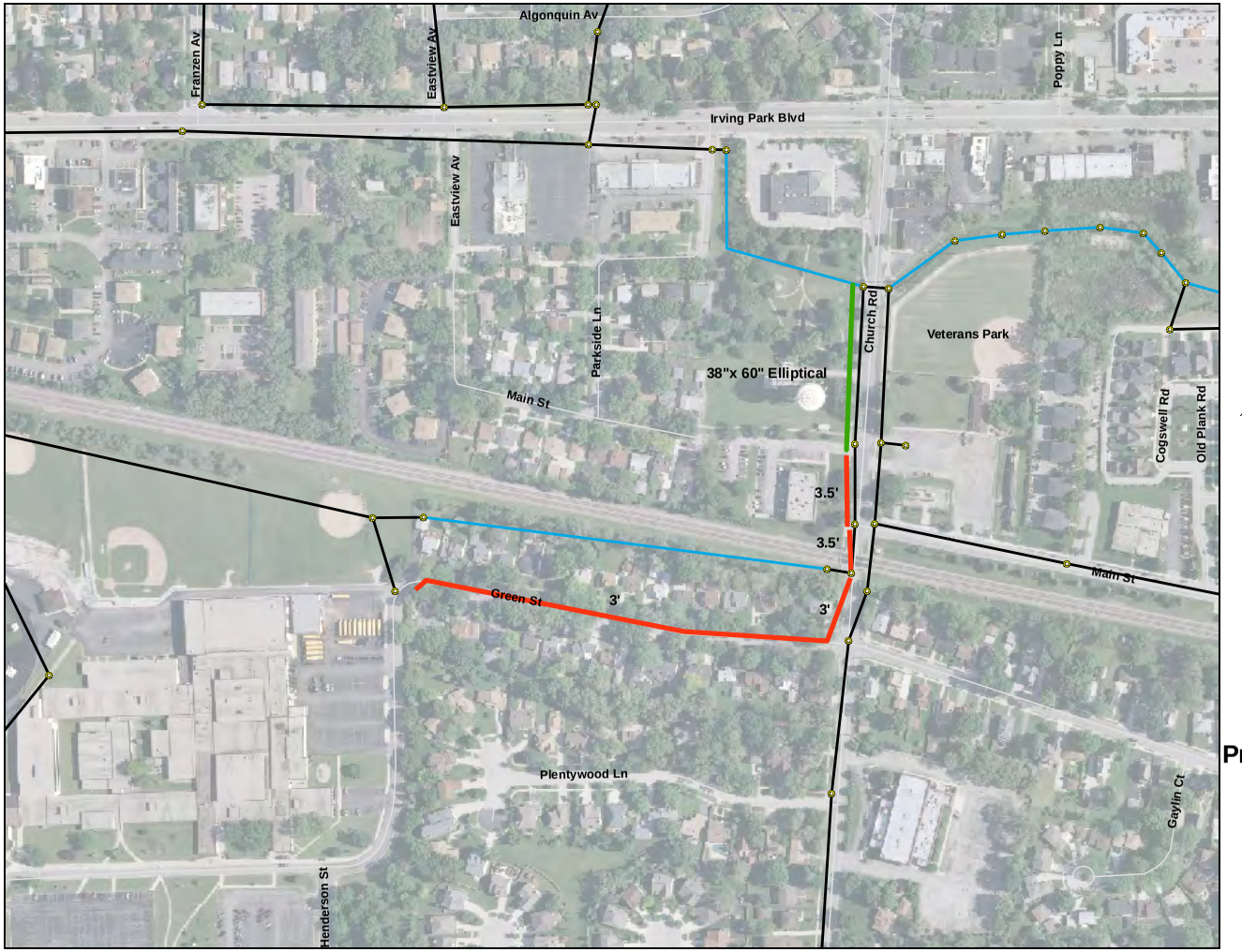
PIPE

Existing XPSWWM Nodes

Bensenville_Boundary

Exhibit G
Problem Area B2

AECOM



N
W E
S

0 200 Feet

Legend

Proposed Improvements

- Abandon
- Elliptical Sewer
- Circular Pipe

Existing XPSWWM Links

- OPEN CHANNEL
- PIPE
- Existing XPSWWM Nodes
- Bensenville_Boundary

Exhibit H
Problem Area B3

AECOM

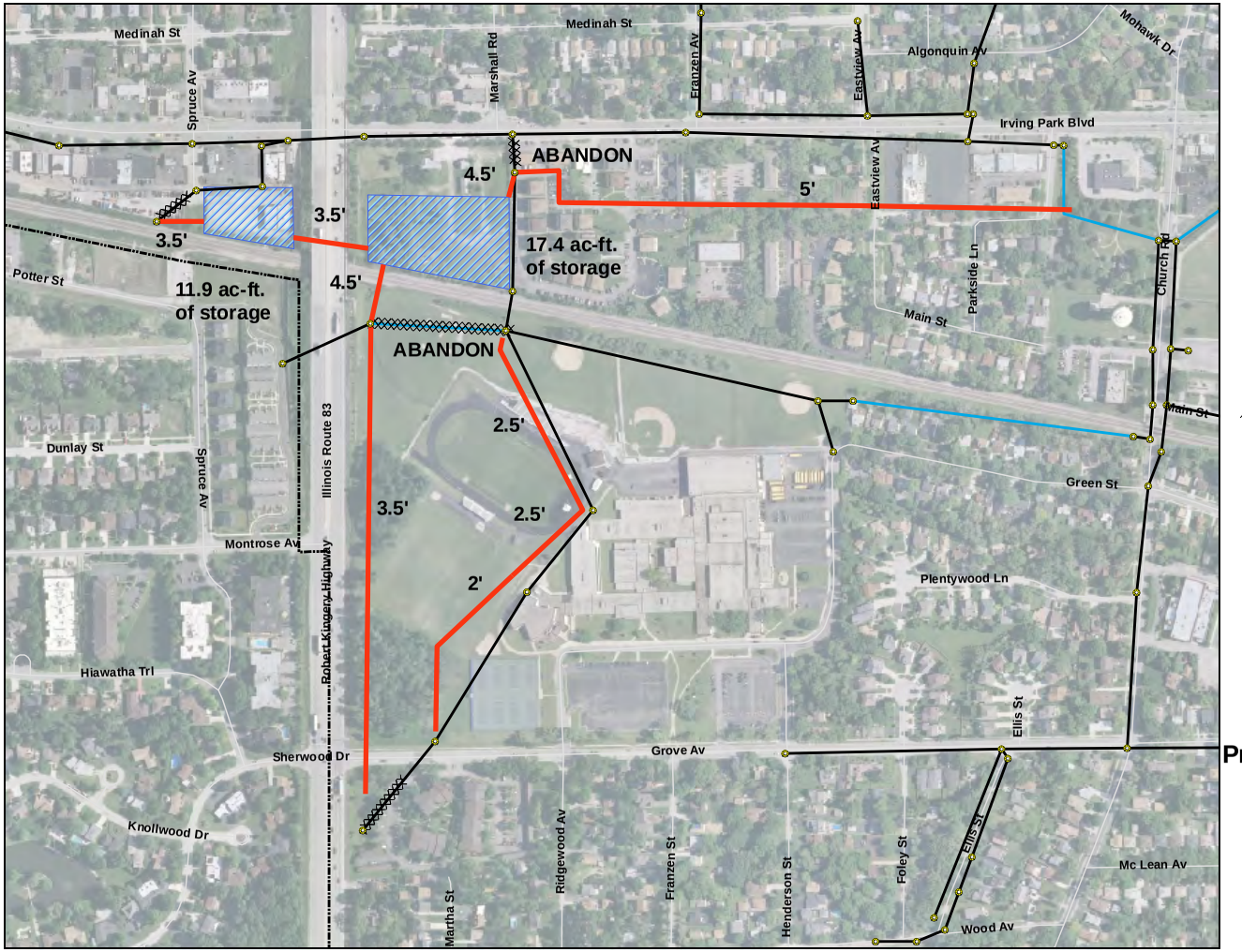


Exhibit I
Problem Area B4

AECOM

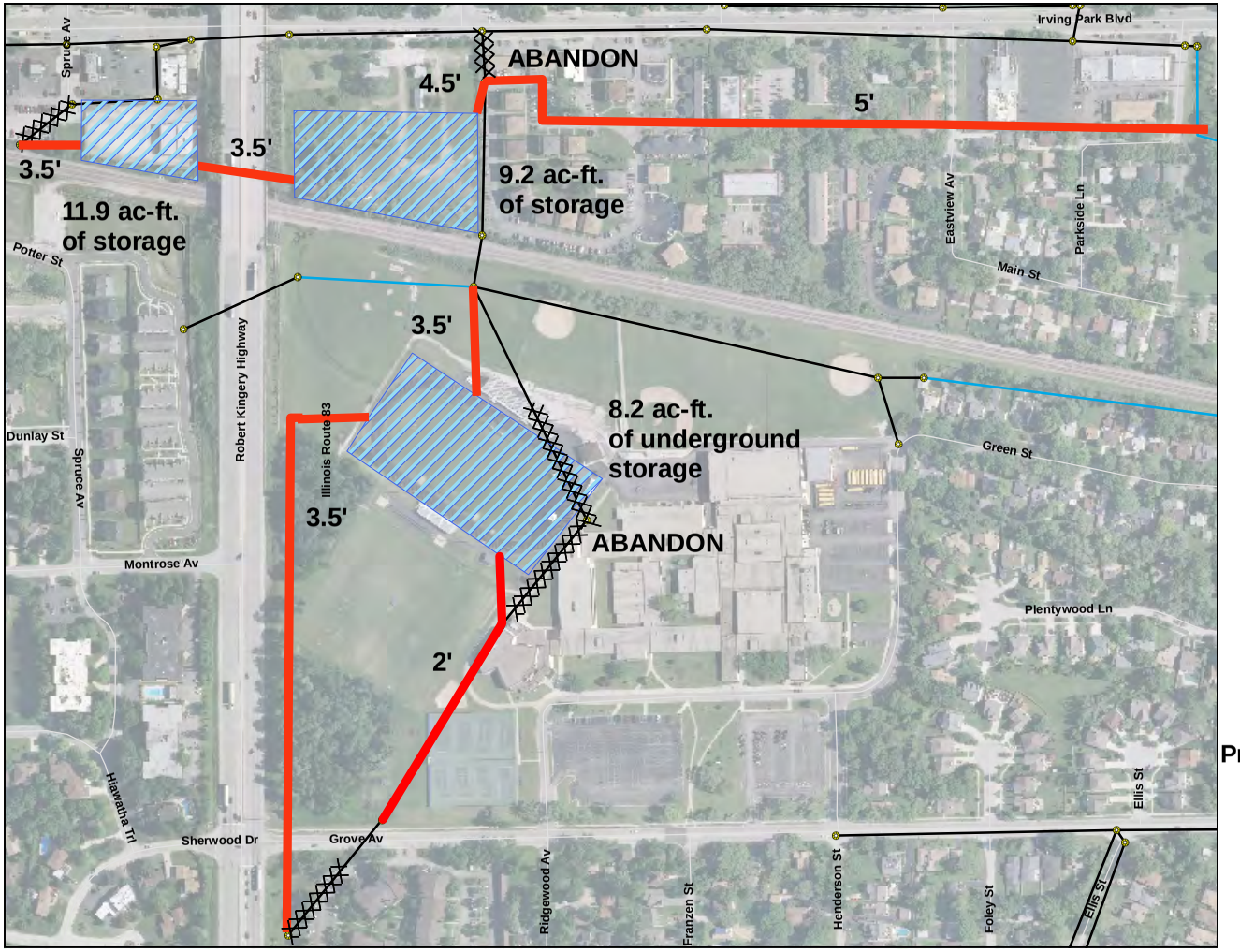
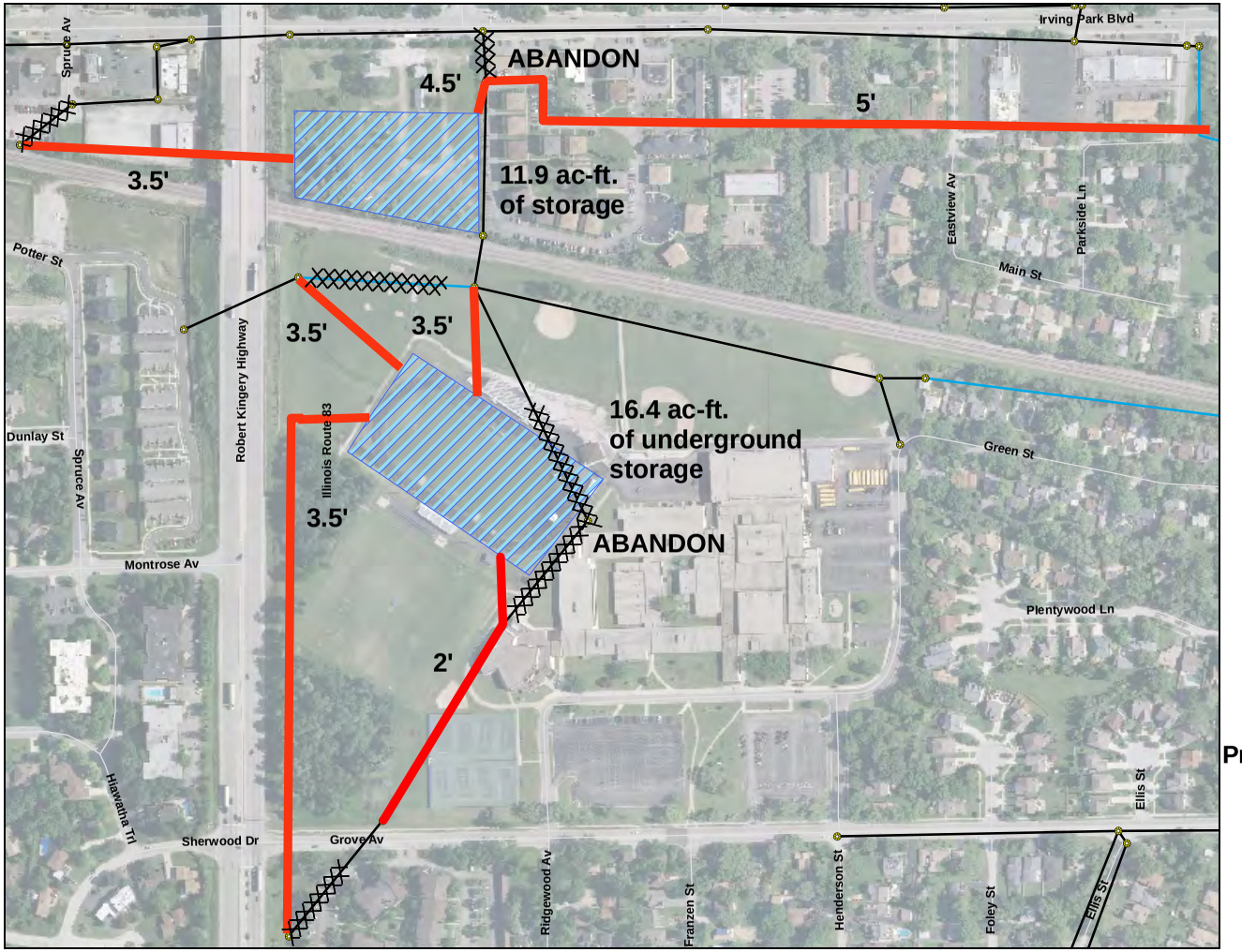


Exhibit I-1
Alternative 1
Problem Area B4

AECOM



N
W E
S

0 300 Feet

Legend

- Proposed Improvements

Existing XPSWWM Links

- OPEN CHANNEL
- PIPE
- Existing XPSWWM Nodes

Exhibit I-2
Alternative 2
Problem Area B4

AECOM

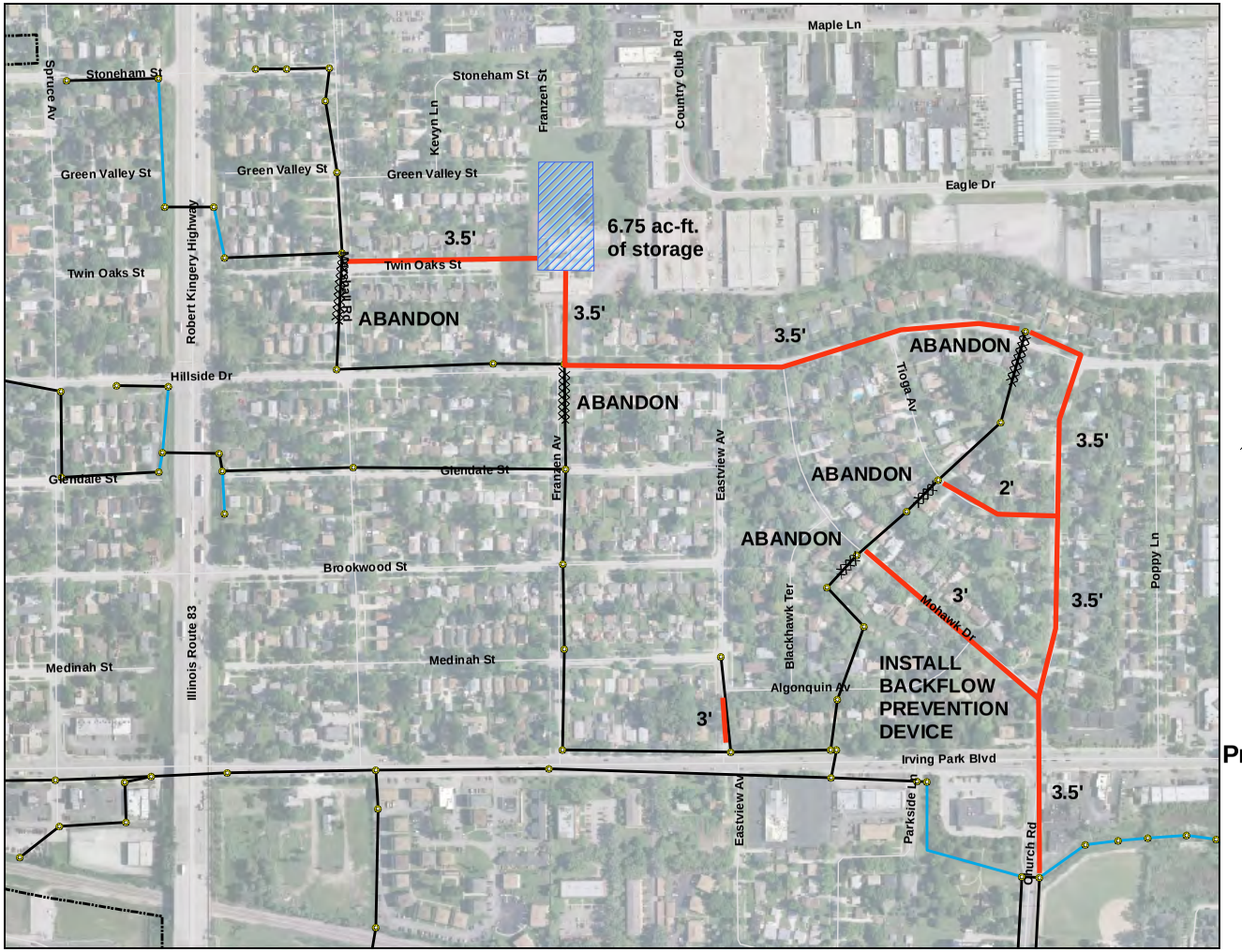
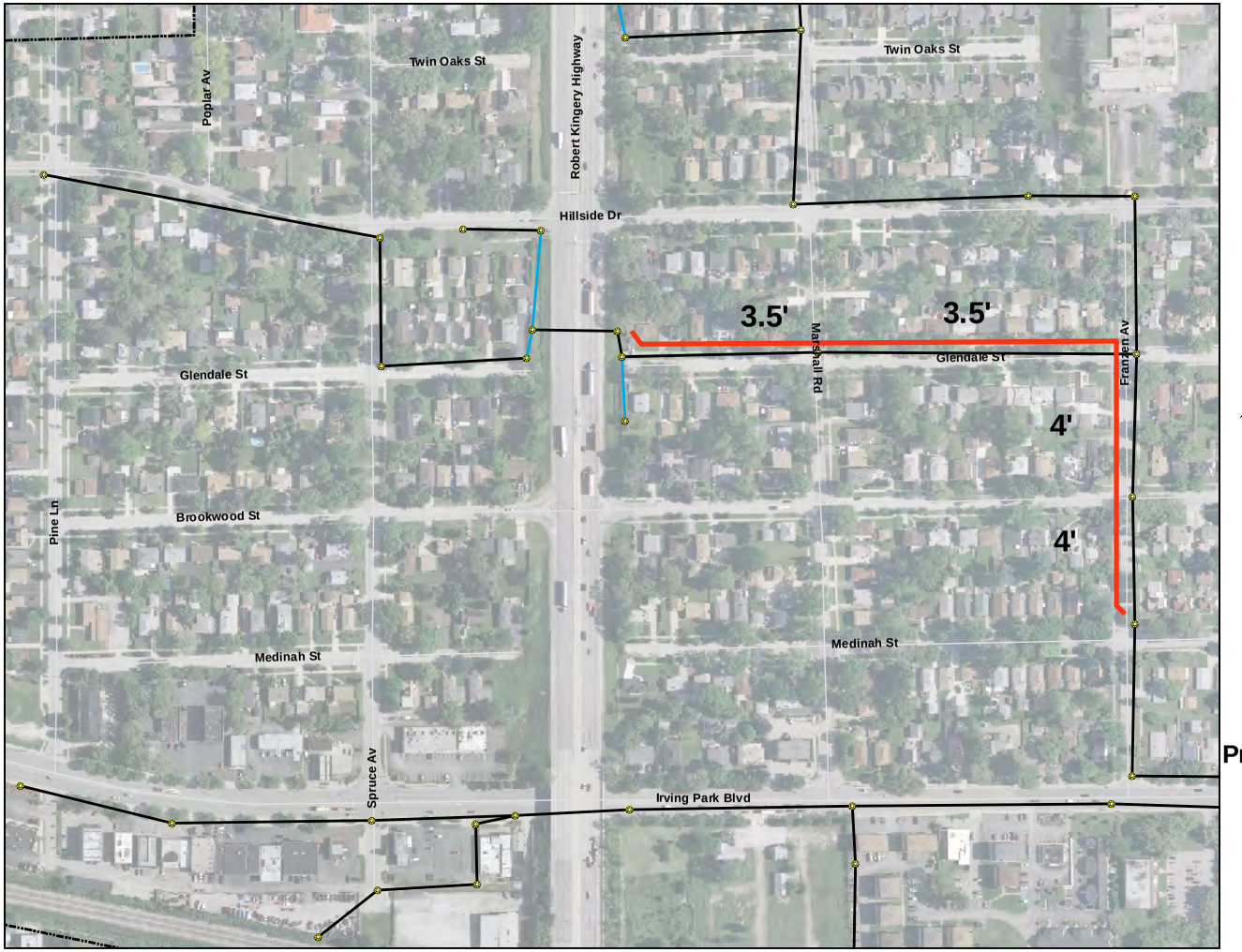


Exhibit J
Problem Area B5

AECOM



N
W E
S

0 200 Feet

Legend

Proposed Improvements

Abandon

Circular Pipe

Existing XPSWWM Links

OPEN CHANNEL

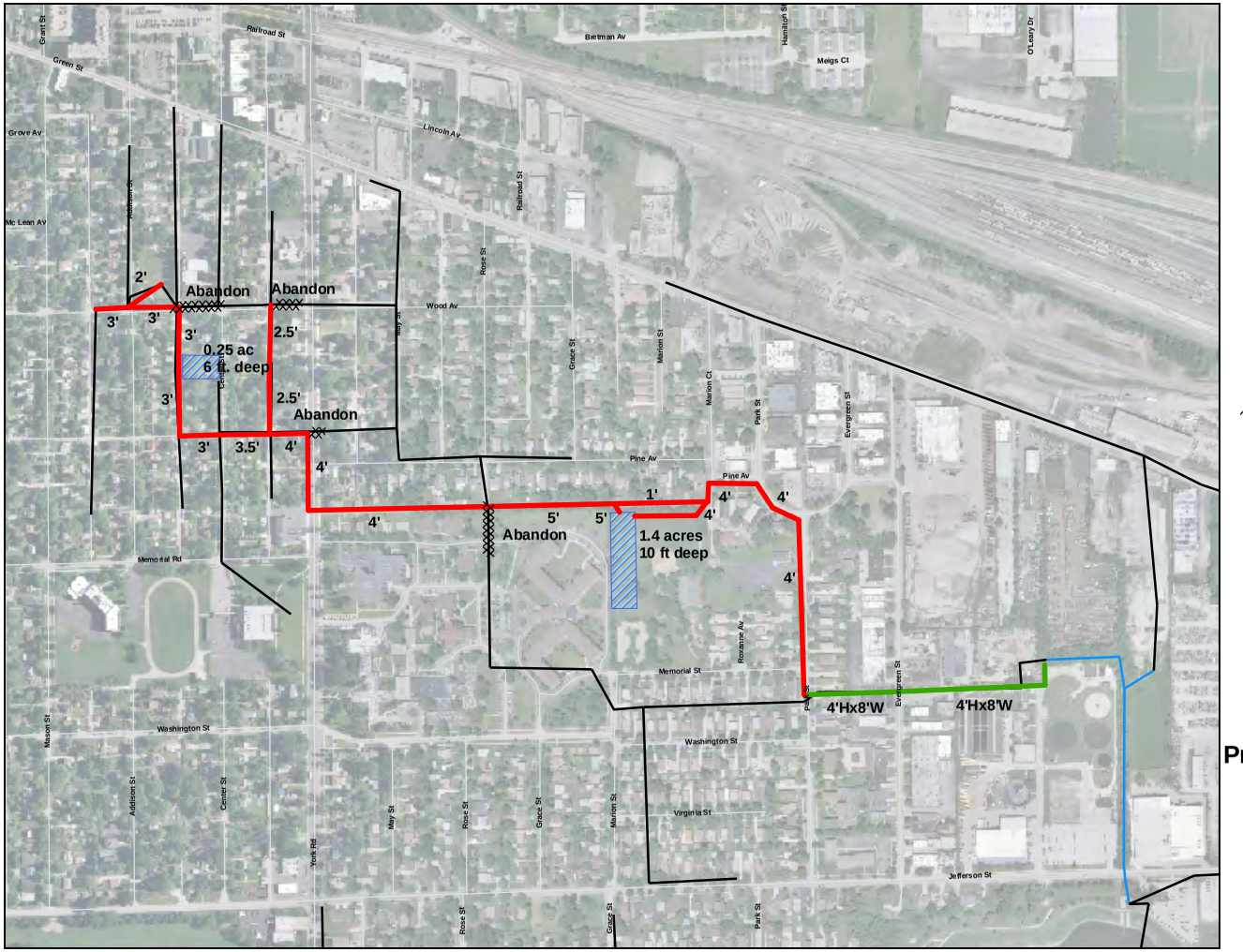
PIPE

Existing XPSWWM Nodes

Bensenville_Boundary

Exhibit K
Problem Area B6

AECOM



N
W E
S

0 400 Feet

Legend

Proposed Improvements

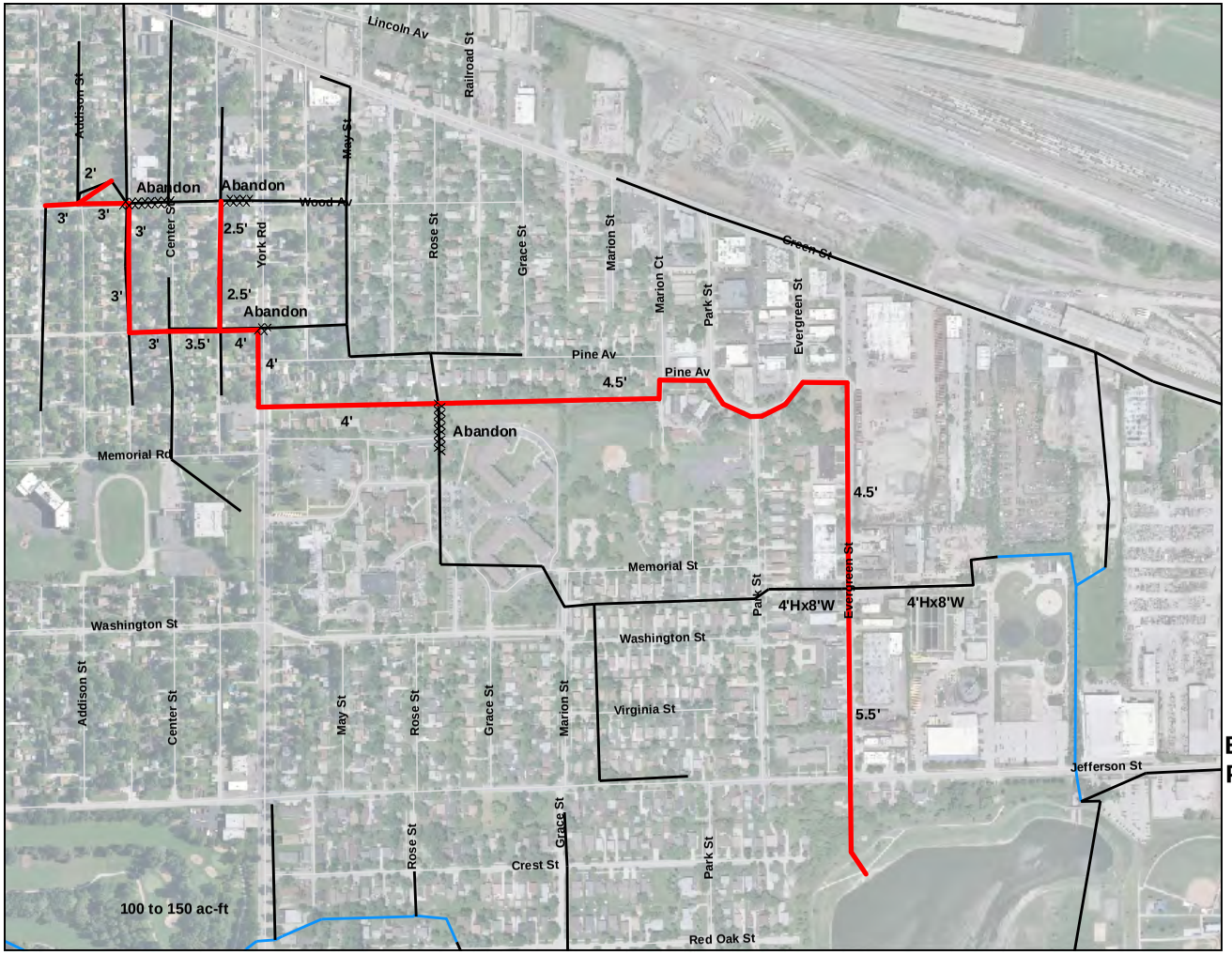
- ABANDON
- BOX
- PIPE
- ProposedStorageAreas

Existing XPSWMM Links

- OPEN CHANNEL
- PIPE

Exhibit L
Alternative A1
Park Street
Problem Area A1

AECOM



N
W E
S

0 400 Feet

Legend

Proposed Improvements

ABANDON

PIPE

Existing XPSWMM Links

OPEN CHANNEL

PIPE

Exhibit M
Alternative A1
Evergreen Street
Problem Area A1

AECOM

N
W E
S

0 200 Feet

Legend

Proposed Improvements

Proposed Improvements

Existing XPSWMM Links

OPEN CHANNEL

PIPE

Exhibit N
Problem Area A2

AECOM

N
W E
S

0 200 Feet

Legend

Proposed Improvements

Proposed Improvements

Existing XPSWMM Links

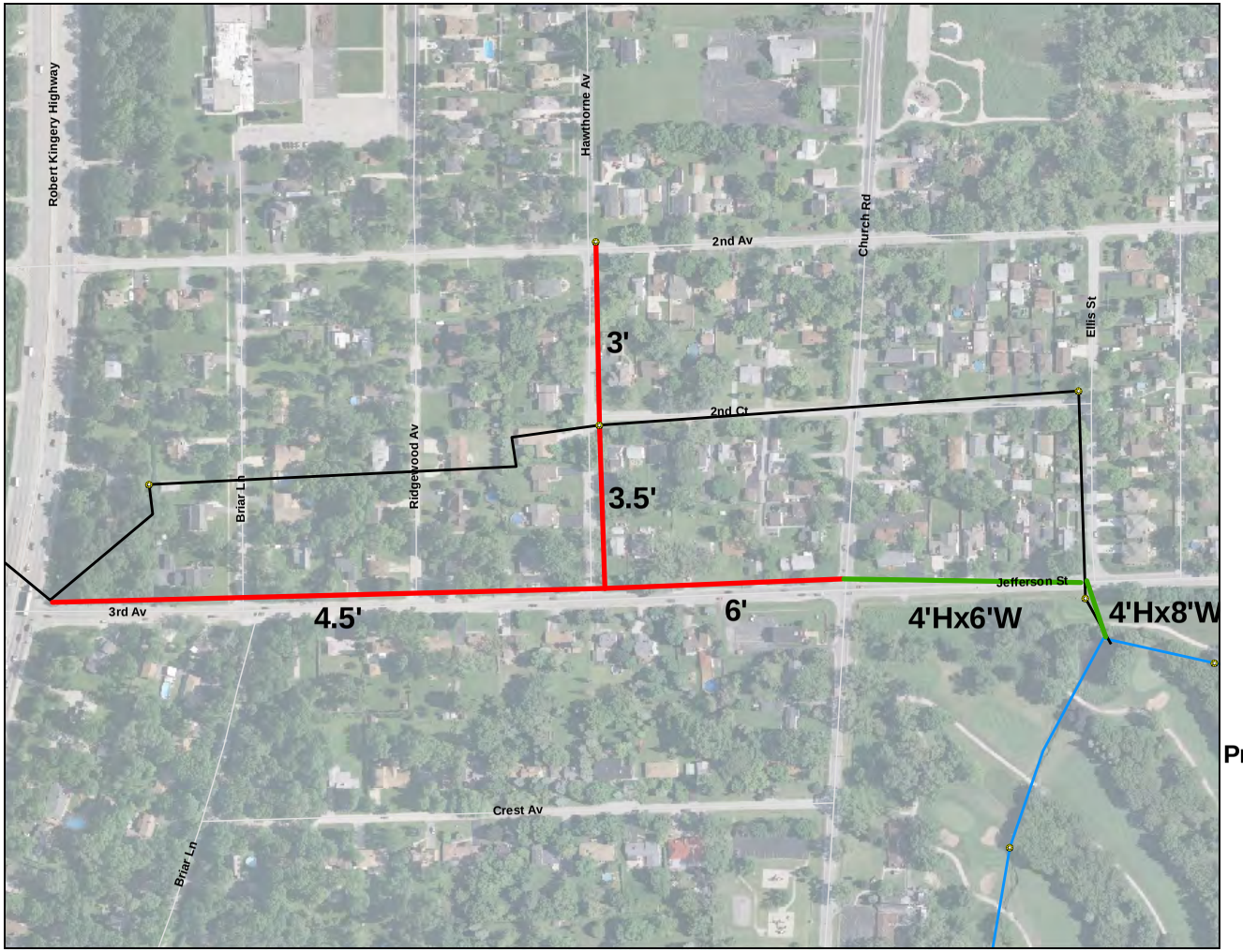
OPEN CHANNEL

PIPE

Existing XPSWMM Nodes

Exhibit O
Problem Area A3

AECOM



N
W E
S

0 200 Feet

Legend

Proposed Improvements

- BOX
- PIPE

Existing XPSWMM Links

- OPEN CHANNEL
- PIPE
- Existing XPSWMM Nodes

Exhibit P
Problem Area A4

AECOM

N
W E
S

0 400 Feet

Legend

Proposed Improvements
- BOX
- ProposedStorageAreas

Existing XPSWMM Links
- OPEN CHANNEL
- PIPE
- Existing XPSWMM Nodes

Exhibit Q
Problem Area A5

AECOM