Summary Report

Chesterton Dunes Kankakee Trail Feasibility Study

Chesterton, Indiana

September 2012

SEH of Indiana

Contents

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NOAA National Oceanic and Atmospheric Administration U.S. Department of Commerce

Indiana Lake Michigan Coastal Program

Town of Chesterton Indiana

Introduction

OVERVIEW OF STUDY

The Dunes Kankakee (DK) Trail is proposed as a north/south multi-use, regional destination trail that would link the Indiana Dunes State Park and the Kankakee River. The purpose of the Dunes Kankakee Trail Corridor Feasibility Study is to identify a preferred trail alignment from its termination in the Town of Porter on the north through the Town of Chesterton, ultimately linking with Porter County's segment on the south. The summary report document summarizes the planning process and serves as a resource for the next step in the development of the Dunes Kankakee Trail – engineering design.

The study is divided into three main tasks. Task I includes Initiation & Discovery. Task II develops the Draft Master Plan, which assesses three alternative routes and is summarized in this document. Task III further develops the preferred route into a final master plan. Guidance from the Chesterton Dunes Kankakee Steering Committee, key stakeholders, Chesterton's Redevelopment Commission and Town Council, and the public has been sought at each stage.

OVERVIEW OF THE SUMMARY REPORT

The summary report illustrates the preferred alignment for the Chesterton Dunes Kankakee Trail and processes to achieve it. The report includes the trail corridor vision, goals & objectives, recommended alignment, cost estimate, and implementation measures. These are illustrated through a number of plans, cross-sections, and photos of recommended amenities.

The report includes illustrations of the analysis leading up to the preferred alignment, such as the mapping of assets and challenges, the outcome of visioning activities with the public, summaries of stakeholder input, and current safety and design standards for shared use paths. This report also summarizes the process of exploring route alternatives and the criteria to used to evaluate them. Alternatives are detailed more extensively in the draft master plan, where each is illustrated with a route map, descriptions, existing photos, proposed cross-sections, and a rating based on the guiding principles.

Proposed typical cross-section showing the Dunes Kankakee Trail in an off-road condition.

Trail Corridor Vision

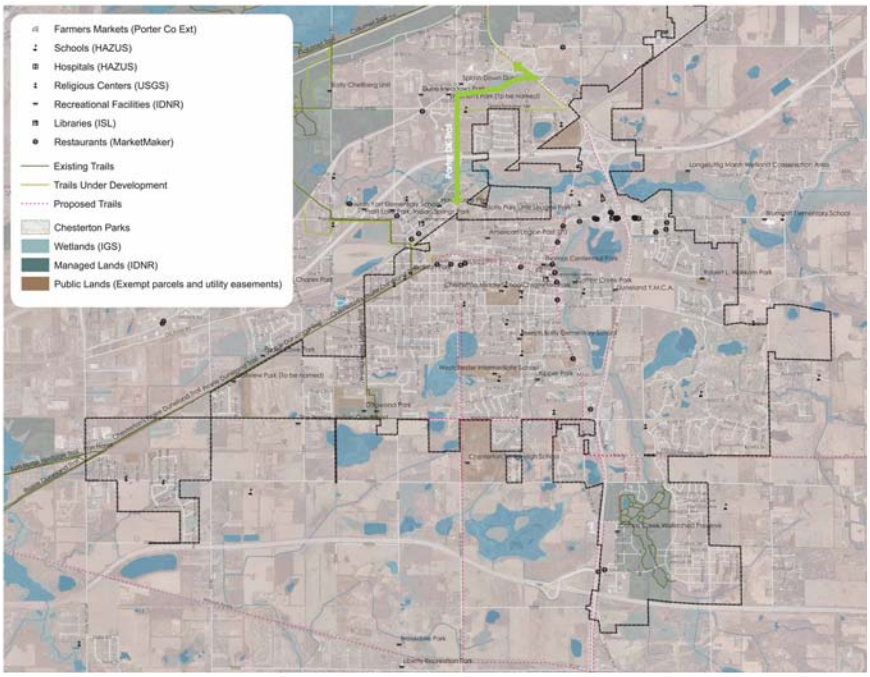
Through input from community meetings and interviews with key stakeholders, nine guiding principles were developed for Chesterton's Dunes Kankakee Trail:

1. *User Experience*
2. *Safety (modal separation)*
3. *Economic Benefits*
4. *Education/Interpretation*
5. *Local Connectivity*
6. *Destinations, Connections, Access*
7. *Trailheads*
8. *Environmental Benefits*
9. *Cost Effectiveness*

These guiding principles form the rating system against which trail alternatives are graded and ranked. In the next section, each of the three alternative routes is summarized and graded according to adherence to these guiding principles. More detailed descriptions of preliminary alternatives may be found in the draft master plan, submitted in May 2012.

The stakeholder interviews and community meetings indicated a preference for:

- **A diversity of experience along the trail**
- **A connection with Coffee Creek**
- **Linkage to the historic downtown's shops and parks**
- **A trail that captures the character of Chesterton**
- **A trail that is safe and comfortable for less experienced cyclists**
- **A trail that will appeal to residents and tourists alike**



Early Asset Mapping

"The trail should reach a variety of destinations, some recreational, but some practical (library, post office, etc) so that people can think of bicycles also as practical and sustainable transportation."

~ Chesterton Resident, at Visioning Meeting

How We Got Here

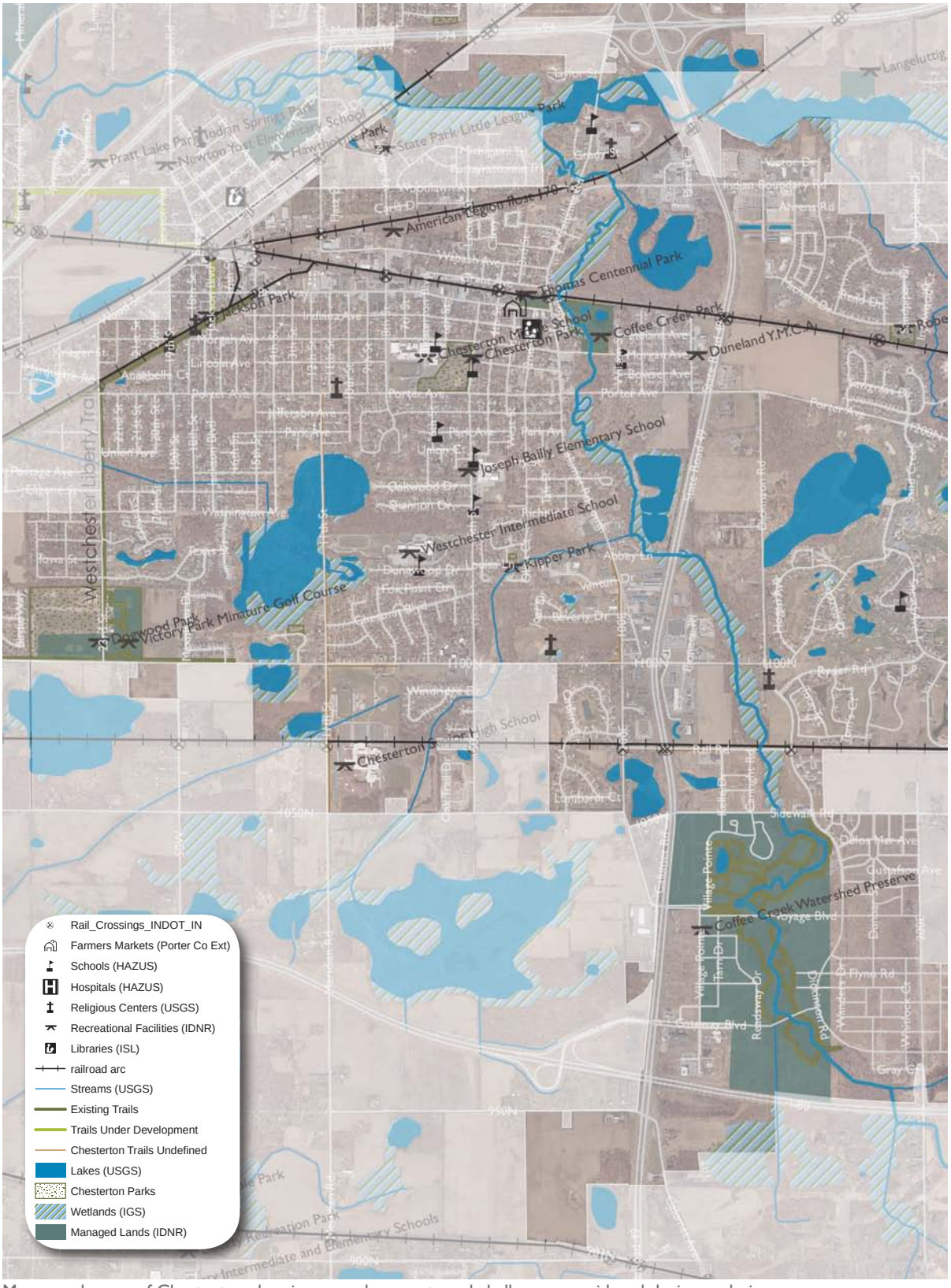
Task 1 of the study was comprised of activities related to project initiation and discovery. The study was kicked off with the steering committee in January 2012. Throughout January and February the project team gathered background data from the Town and regional sources, made numerous site visits to document existing conditions, and conducted eight interviews with key stakeholders. The Town hosted a Visioning Meeting in February where the project team lead the public through exercises to determine the desired qualities of Chesterton's Dunes Kankakee Trail. By the end of February, the team began to develop alternative routes for discussion with the steering committee.

Task 2 of the study developed three alternative alignments for the proposed trail. These alternatives and their associated cost estimates were presented to the steering committee, the public, and to the Town Council in three meetings during April and May. Feedback from these sessions guided the development of a preferred alignment with two options for a northern leg. This process was documented in the draft master plan, presented to the Chesterton Dunes Kankakee Trail steering committee in mid-June.

Task 3 of the study further refined the preferred alignment and cost estimate. The final master plan was presented for review and comment to the steering committee, Redevelopment Commission, and Town Council.

Team site visits with stakeholders

Getting feedback at community meeting



Macro-scale map of Chesterton showing some key assets and challenges considered during analysis.

Inventory & Analysis

Potential connections and challenges were mapped using GIS to help inform early route studies. This mapping was augmented by extensive field verification and assessment. Existing elements mapped as desirable trail connections include streams, parks, municipal facilities, public lands, health care facilities, utility corridors, schools, churches, business districts, and festival locations. Elements mapped as challenges to trail development include rail crossings, roads with high traffic speeds or volumes, wetlands, and privately owned property.

Corridor Studies

For the initial public meeting, seven distinct trail corridors were identified through stakeholder interviews and discussions with the DK steering committee. These corridors are represented in the map on the following page.

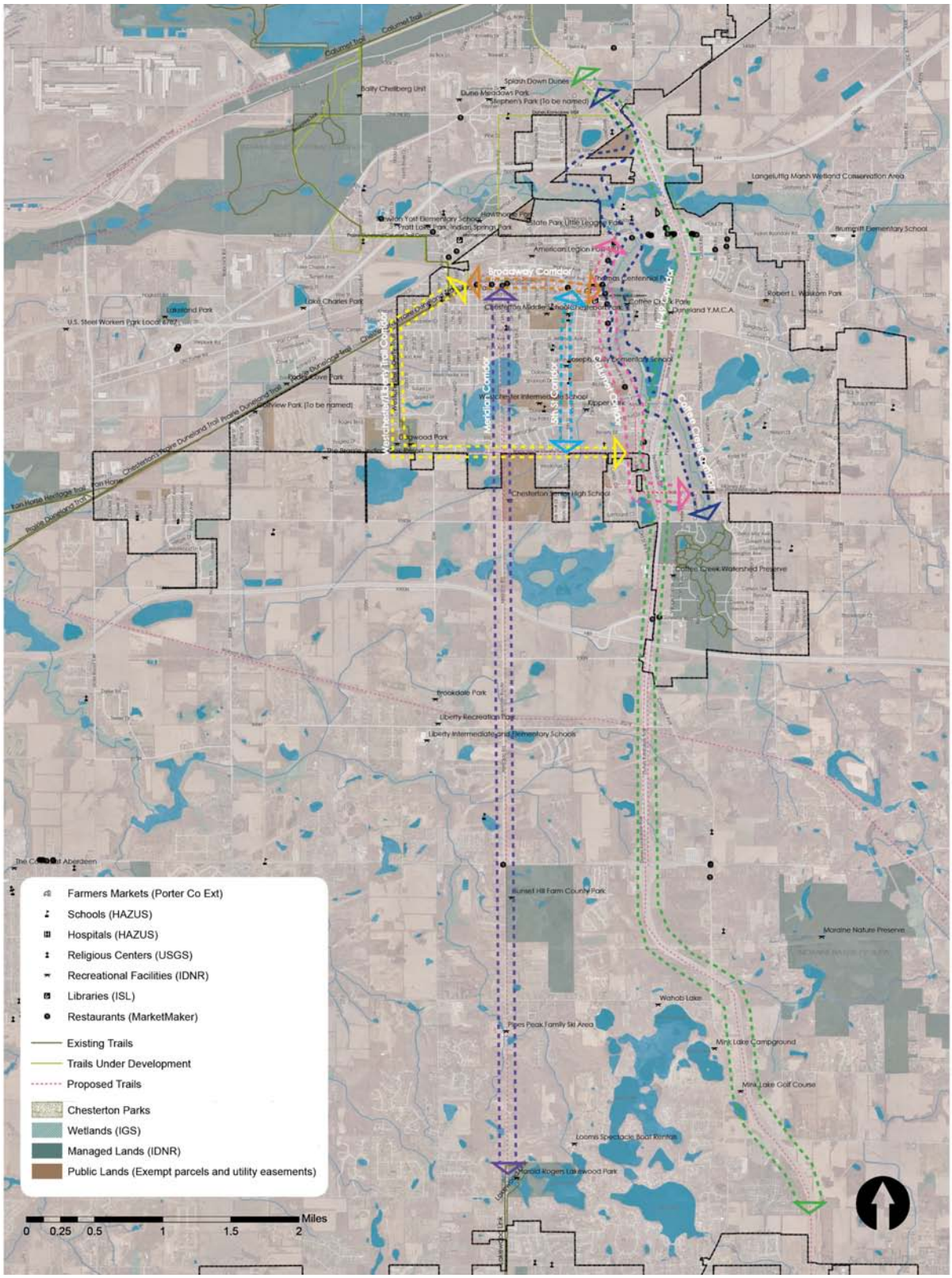
Stakeholders and attendees at public meetings weighed in on who would be expected to use the trail, what they admired in a trail, and the qualities they envisioned the DK would possess.

The stakeholder interviews and community meetings indicated a preference for:

- A diversity of experience along the trail
- A connection with Coffee Creek
- Linkage to the historic downtown's shops and parks
- A trail that captures the character of Chesterton
- A trail that is safe and comfortable for less experienced cyclists
- A trail that will appeal to residents and tourists alike

Although a variety of types of cyclists and pedestrians were identified as potential users of the trail, stakeholders and residents agreed that the trail should be designed to accommodate primarily recreational users and families with children in particular. The American Association of State Highway and Transportation Officials (AASHTO) classifies recreational users and families with children as "casual or less confident riders." AASHTO also reports that the majority of the population is classified as casual or less confident riders.

During multiple site visits, cyclists were observed riding on roads and sidewalks. Sidewalk riders tended to be youths or elderly. Cyclists choosing roads were typically young and middle-aged adults.



Seven main corridors were identified and discussed at the visioning meeting. Through stakeholder interviews and feedback from attendees of the visioning meeting, families with children were identified as primary users of the future Chesterton Dunes Kankakee Trail.

Route Alternatives

Overview

Using feedback from public meetings, stakeholder interviews, and the DK steering committee, three main routes were identified for further study, two with alternatives for the northern leg. All routes and alternatives are illustrated in the figure at right. The routes include the:

- *Taste of Chesterton,*
- *Interurban Hybrid,* and
- *Trail of Least Resistance*.

The map at right identifies several key features important in the consideration of route alternatives. The map locates key zones for linkage like parks and business districts. It also identifies existing trails and potential trailheads. Schools and municipal buildings are mapped, as well as trail under passes and overpasses–key elements in determining the safety and potential costs of each route.

Route Alternative 1

The *Taste of Chesterton* is characterized by the most contact with downtown Chesterton's business district, including two alternatives for travelling the length of Broadway into the historic district. The southern leg of the route takes advantage of planned improvements to South Calumet Road and utilizes CR 200E to cross I-90. Three northern legs are identified as alternatives for Route 1. Route 1a is an off-road trail following Broadway. Route 1b also follows Broadway, but is an on-street bike line defined by striping only. Route 1c utilizes Wabash to avoid the complexity of Broadway, instead crossing the rail lines at 4th St.

Each *Taste of Chesterton* alternative has its benefits and drawbacks. The complexity of building each is reflected in their estimated cost per mile:

Route 1a: $1,000,000/mile

Route 1b: $850,000/mile

Route 1c: $700,000/mile

Route Alternative 2

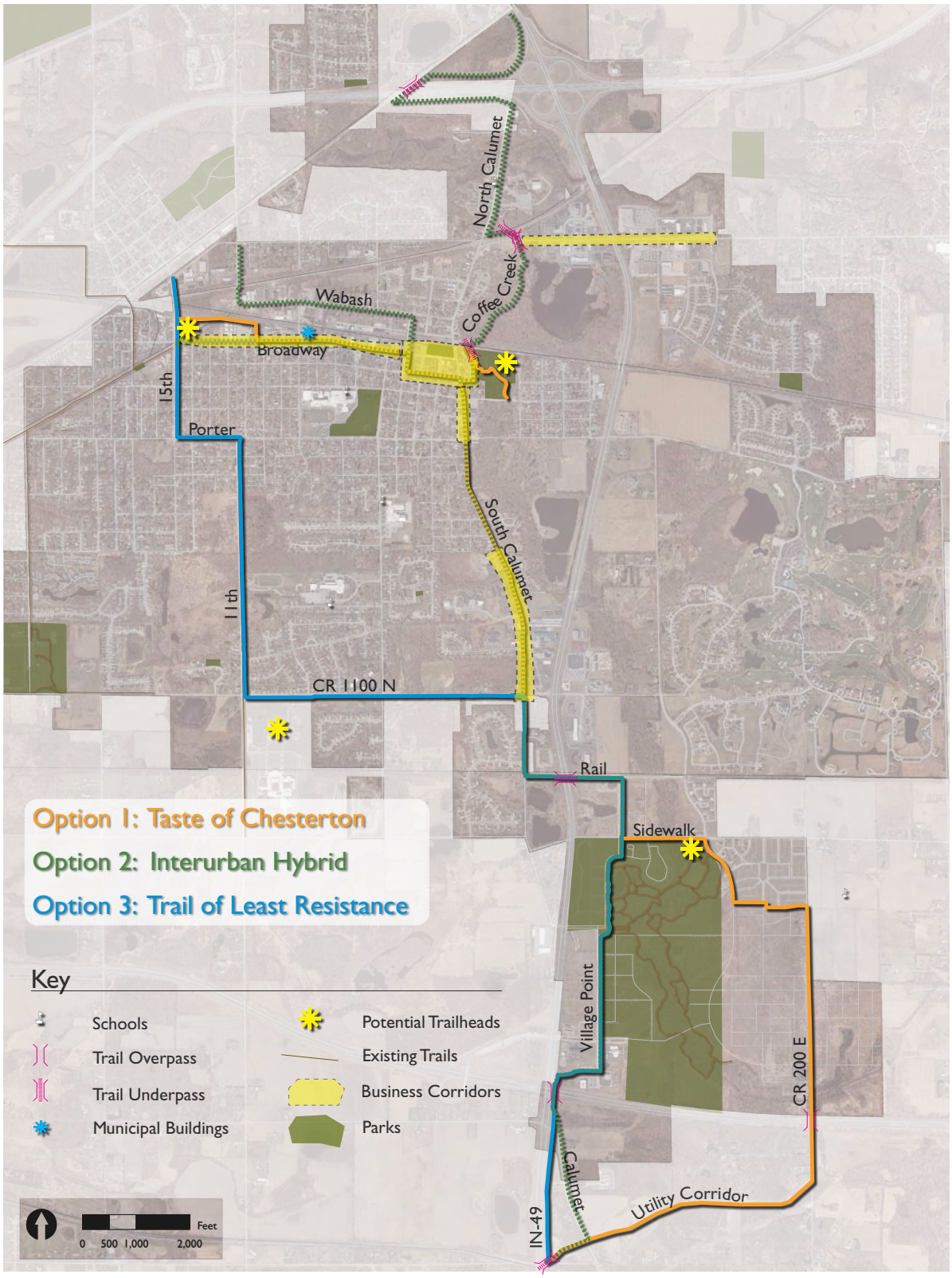
The *Interurban Hybrid* route is characterized by an off-road northern leg that follows Coffee Creek from Indian Boundary Road until Coffee Creek Park. The route then follows, as closely as safety allows, the alignment of the historic Interurban Rail Line, utilizing South Calumet Road (known historically as Old State Road 49). This route is identified in green throughout the document.

The *Interurban Hybrid* combines the route of the old Interurban passenger train that ran through Valparaiso up to 3rd & Broadway in Chesterton along Calumet Rd and some scenic off-road routes that run through natural areas, sometimes following Coffee Creek.

The two options, 2a and 2b, are differentiated by their northern legs. Option 2a uses off-road segments and North Calumet Rd. Option 2b avoids some complicating factors of constructing grade separated crossings at rail and road intersections by utilizing Wabash, as in Alternative 1c. Because neither option makes a direct connection with the terminus of the Prairie Duneland Trail at 15th & Broadway, signage and/or bike lanes are suggested along Broadway to bridge the gap between the two trails. Costs per mile for the two alternatives are roughly:

Route 2a: $1,000,000/mile

Route 2b: $780,000/mile



Key features to consider for each route

Route Alternative 3

The *Trail of Least Resistance* is characterized by leveraging Chesterton's existing trail resources. This route shares corridors with existing trail along 11th St and a planned route along CR 1100N extending the Westchester Liberty Trail. The southern leg of the route aligns closely with the Interurban Hybrid route and uses IN-49 to cross I-90.

Route 3 leverages existing trail resources in an effort to lower potential construction time and cost. Several segments of the route overlap existing or planned trails and few of the segments provide difficult engineering challenges.

However, for Route 3, simplicity comes at the cost of some guiding principles, because it provides few economic, environmental, or educational benefits. The route does not provide connections to desirable natural areas and business districts. The estimated cost of Route 3 is $720,000/mile.

Summary Table for all route alternatives

	Option 1A: Taste of Chesterton	Option 1B: Taste of Chesterton	Option 1C: Taste of Chesterton	Option 2A: Interurban Revisited	Option 2B: Interurban Revisited	Option 3: Trail of Least Resistance	
Visitor Experience	●	●	◓	●	◓	○	● 3 points
Safety (i.e. modal separation)	◓	○	◓	●	◓	◓	◓ 2 points
Economic Benefits	●	●	◓	◓	◓	○	○ 1 point
Education/Interpretation	◓	◓	◓	●	◓	○	
Local Connectivity	●	●	◓	◓	◓	◓	
Destination Connections/Access	●	●	●	◓	◓	○	
Environmental Benefits	◓	◓	◓	◓	◓	○	
Trailheads	●	●	◓	◓	◓	◓	
Cost Effectiveness**	○	◓	●	○	●	●	
Total Score	**22**	**22**	**20**	**20**	**19**	**14**	

Feedback on Route Alternatives

The three route alternatives were presented to the Chesterton DK Trail steering committee and at a community meeting in April 2012. Feedback from these meetings indicated a preference for a combination of alternatives 1a and 2a, with two northern leg options. A preference exercise at the community meeting showed a strong opposition for the northern half of alternative 3. Other comments from the public included:

- Preference for a trail that is visible from an arterial road (like IN-49) for marketing purposes
- Concerns about safety of using existing bridge at 200 E to cross I-90; perceived low visibility and narrow passage
- Concerns about safety of Broadway segment, with regard to the number of driveway crossings
- Preference for potential development catalyst of a route utilizing Broadway
- Suggestion that Broadway route commence at Jackson/17th instead of 15th
- Concerns about quality of experience of segment along rail right of way parallel to Broadway
- Preference for strong connection to Coffee Creek Watershed Preserve

The consultant team gathered input from residents, board members, and steering committee members to determine a preferred alignment to take to the next level.

Best Practices for Regional Trails

The Dunes Kankakee is a regional trail, and as such, traverses a variety of environments, each with unique challenges. The design and amenities of the trail must adapt to the specifics of the surroundings, by incorporating distinct urban design elements and engineering solutions to ensure the trail is safe and enjoyable throughout its entire length.

In this study, recommendations from the American Association of State Highway and Transportation Officials (AASHTO) have been weighed along with the need to incorporate the trail into the existing urban fabric of downtown Chesterton in order to capture the unique character of the town and energize economic development along the corridor. In addition to AASHTO, guidelines for complete streets and ADA regulations were consulted, as well as benchmark trails urbanized areas like the Indianapolis Cultural Trail, the Monon Trail, the Fox River Trail the Old Plank Road Trail, and the Illinois Prairie Path.

Guidelines from AASHTO

The American Association of State Highway and Transportation Officials (AASHTO) makes several recommendations for shared use paths like the proposed Dunes Kankakee Trail. The 2012 *Guide for the Development of Bicycle Facilities* was consulted throughout the development of this study. Some key elements from AASHTO guidelines that should be carried forward through design of the trail include:

- Minimum paved width for a two-directional shared use path is 10 ft. Typically, these paths' widths range from 12-14 ft. Under rare circumstances a reduced width of 8 ft may be used.
- Ideally, the DK trail should maintain graded shoulder of 3-5 ft, with a minimum clearance of 2 ft from adjacent shrubs, trees, large rocks, and poles. In areas where a railing is required, a minimum clearance of 1 ft is acceptable.
- Recommended vertical clearance from obstructions is 10 ft. More clearance may be required in areas where emergency vehicles require access to the trail. In limited constrained areas a minimum clearance of 8 ft may be utilized.
- In areas where the DK is a sidepath (runs adjacent to roadways), a wide separation should be provided between the sidepath and the adjacent roadway. The minimum recommended distance between a path and the road edge is 5 ft. When the separation must be less than 5 ft, a 42 in. physical barrier that does not impair sight distance at intersections should be provided between the path and the roadway.
- In a sidepath condition, reduce the density of driveways and the incidence of less predictable driveway movements through access management.
- Design intersections to reduce driver speeds and heighten awareness of path users by tightening corner radii, adding stop bars or yield markings for vehicles approaching the sidepath, widening sidepaths at intersections, and adding raised crosswalks, chicanes, curb extensions, reflective pavement markings, pavement textures, and appropriate signage.

- Shared use paths, like the proposed DK Trail, function best as a supplement a well-marked on-road network of bicycle routes.

Precedent Trails

Several trails were examined throughout the study, including the Indianapolis Cultural Trail, the Monon Trail through Carmel, and the Old Plank Road Trail through Chicago's southwestern suburbs. These trails were used as precedents because they tackle some of the most challenging aspects of the proposed trail alignment for the DK—urbanized areas. The following images show strategies used by these trails to safely and enjoyably incorporate a shared use path into the urban fabric of their city or towns.

The Indianapolis Cultural Trail uses decorative, colorful pavement markings to aid the safety of trail crossings through congested intersections.

The Indianapolis Cultural Trail defines the trail from roadways with planted beds and parking. Urban design elements like lighting, overhead structures, and unique paved surfaces serve to heighten awareness of path users to roadway users.

The Old Plank Road Trail is the site for frequent farmers markets and festivals in Frankfort, Illinois. This shared use path embraces the downtowns of the southwestern Chicago suburbs it passes through. A similar situation may be found if the DK passes through Chesterton's downtown on European Market and festival days.

The Monon Trail through downtown Carmel highlights a mid-block crossing with a widened path at the intersections, signage, pavement markings, and the use of a differently textured and colored surface through the crossing.

Complete Streets Guidance

Because considerable investment will be required to route the proposed DK trail through Chesterton's urban core, it is important to consider changes to this area holistically and try to bundle needed improvements to maximize the possibility of grant opportunities and leverage of utility funds. The philosophy of the "complete street" is helpful in this respect. The financial benefits of this approach are discussed in the implementation section of the report. More information may be found at http://www.completestreets.org/.

> *"The trail should reach a variety of destinations, some recreational, but some practical (library, post office, etc) so that people can think of bicycles also as practical and sustainable transportation."*
>
> *~ Chesterton Resident, at Visioning Meeting*

The above quote highlights the desire of one Chesterton resident to make cycling a more feasible transportation alternative for everyday tasks. The adoption of complete streets where appropriate during the construction of the DK Trail will help achieve this goal in Chesterton. Complete streets may benefit communities through increased street capacity, improved safety, better health, economic growth, lower emissions, smarter growth, more transportation choice, and reduced costs.

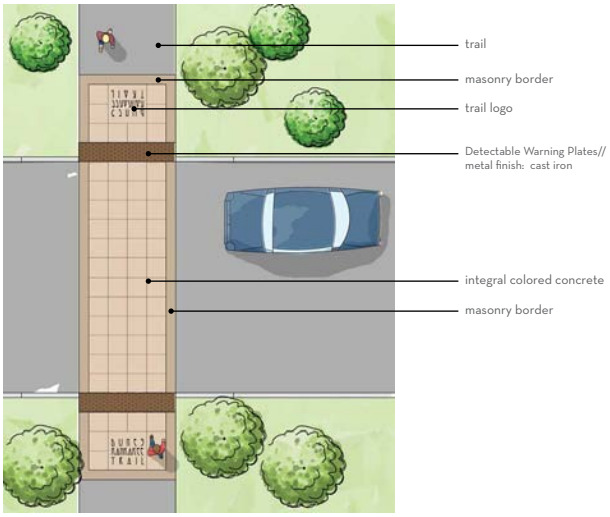
This streetscape in Washington, D.C. neighborhood was a cooperative effort between the Department of Transportation and the local main street organization and resulted in attracting new businesses and investment. Image courtesy www.completestreets.org.

An intersection in Boulder, Colorado that accommodates cyclists, pedestrians, and motor vehicles exemplifies complete street design. Image courtesy www.completestreets.org.

A mid-block crossing for pedestrians and cyclists along a trail in Portland, Oregon incorporates best practices for stormwater management through rain gardens. Image courtesy www.completestreets.org by Greg Raismen.

Trail Design Elements

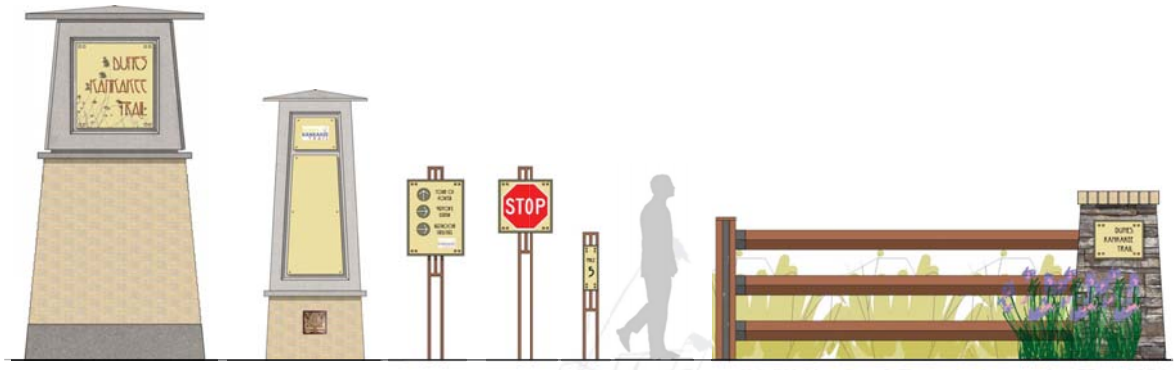
A number of trail design elements have been proposed for the DK Trail in the Porter County Plan Commission's *Dunes Kankakeee Trail Pattern Book.* The forms, colors, and textures presented in the pattern book, while not to be applied identically to every segment of the trail, are particularly appropriate for the DK Trail through Chesterton. The arts and crafts theme blends well with existing architecture and recent branding efforts of the downtown business districts.



Urban Crosswalk

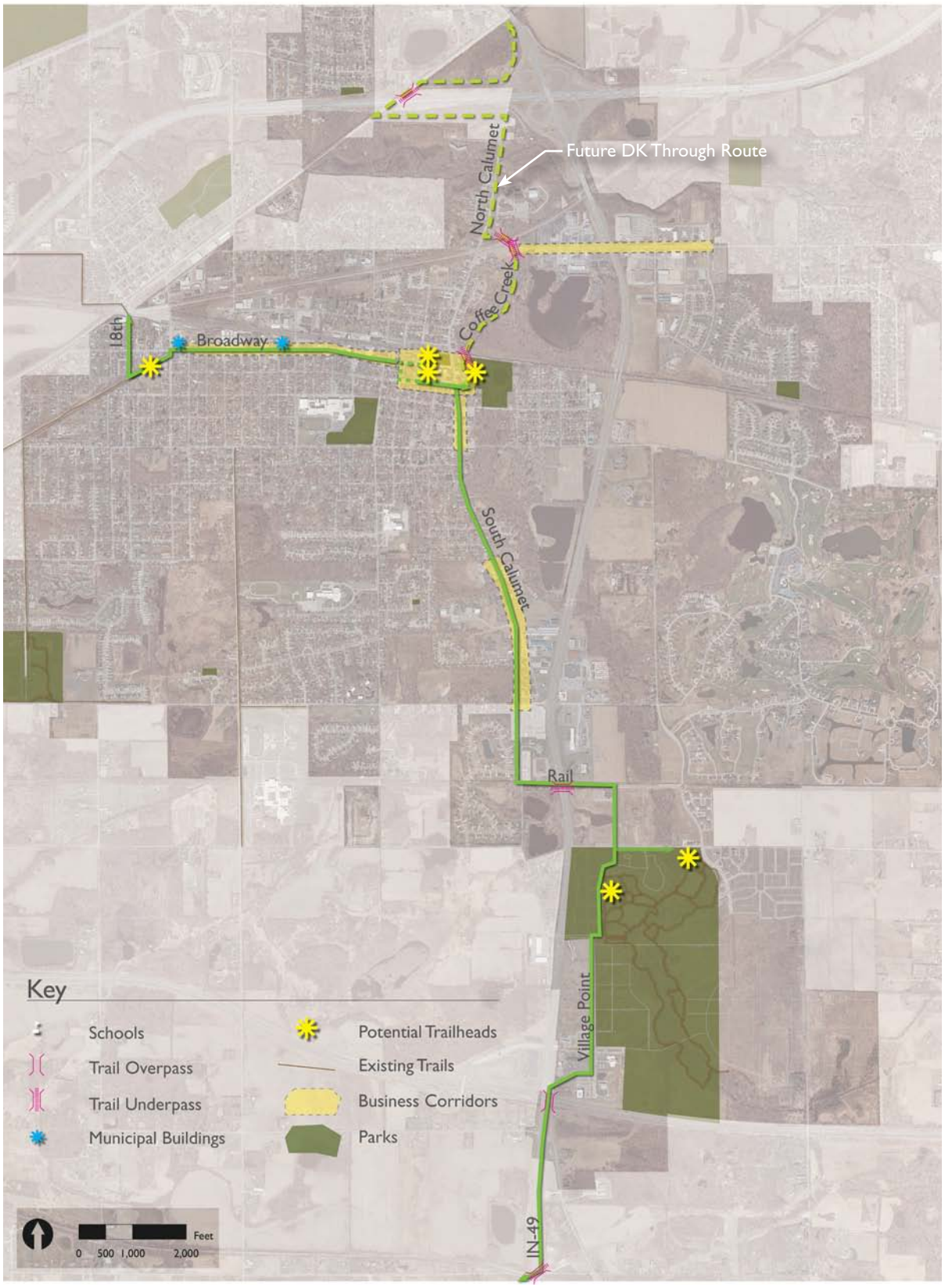
Proposed materiality for urban condition crosswalks.

Proposed imagery for trail amenities.



Proposed imagery for trail wayfinding and safety features.

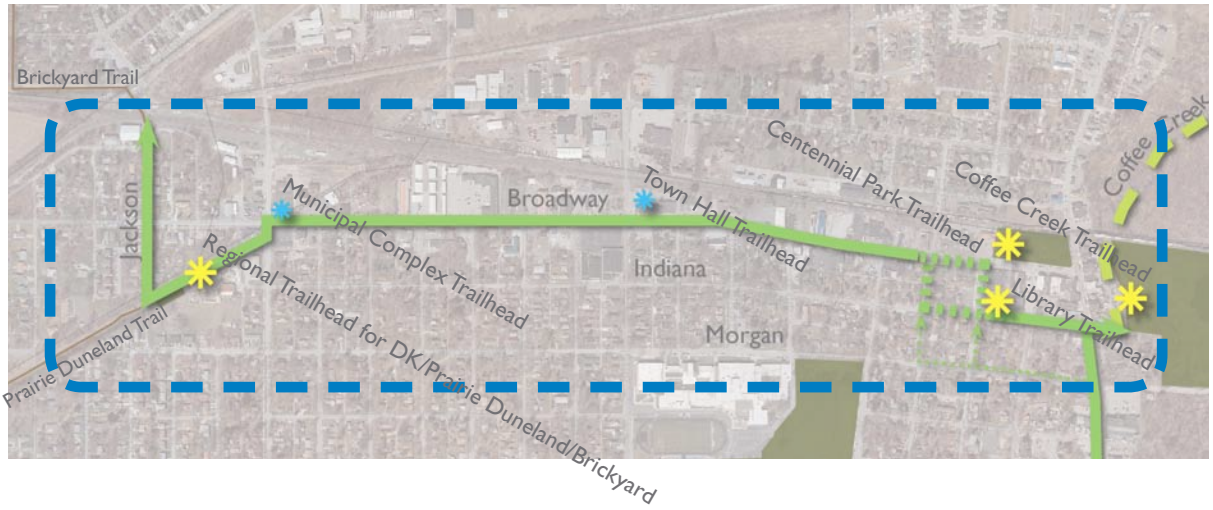
Draft Preferred Route



Preferred route featuring two northern leg options

Virtual Tour

The segment of the proposed trail on Broadway is analyzed to a greater degree in the virtual tour.



Tour Overview

The virtual tour of the proposed route begins with a block by block overview of Broadway. The Broadway segment presents more challenges and carries a higher per linear foot cost than the other sections. This segment is an essential link through Chesterton, connecting the Dunes Kankakee Trail to other regional trails and potentially spurring a revitalization of Chesterton's downtown. It is presented in greater detail than the remaining sections of the trail, whose engineering design will be more straightforward.

The route then heads south via South Calumet Rd, linking to the recently completed South Calumet Business District. It continues onto County Road 100, and crosses under IN-49 on Rail Rd. The route again heads south on Kelle Dr and Village Point, providing access to the Coffee Creek Watershed preserve amenities such as parking, public restrooms, an outdoor amphitheater and event space, a nature trail network, and potentially, shopping. The DK traverses Interstate 90 using the IN-49 overpass and continues within the ample IN-49 right of way until the utility corridor at CR 900.

The route terminates just outside Chesterton's municipal boundary at the IN-49 underpass at CR 900. This prospective terminus allows for flexibility during later planning stages, when Porter County and Valparaiso will eventually connect their legs of the Dunes Kankakee Trail to Chesterton's portion.

Preliminary research indicates that Valparaiso is considering three possible locations to connect to the northern leg of the trail–Meridian Rd, Calumet Rd, or IN-49. The terminus at the underpass of IN-49 does not preclude any of these options. Calumet Rd is a short distance away, the utility corridor provides access to Meridian Rd, and IN-49 is just overhead.

Engineering Challenges throughout the Route

Throughout the route, some engineering challenges appear frequently. These include multiple overly wide or ill-defined driveways and intersections, obstacles on or in the right of way, structures built on or in the right of way, and narrow rights of way. These challenges are most pronounced on Broadway and South Calumet Rd. The following outline engineering solutions to be employed in these circumstances.

Intersections and driveways

Intersections and driveways that are too wide can be narrowed for easier trail crossing and traffic calming. Ill-defined driveways can be re-designed so that traffic circulation is clear to cars and to trail users. In some cases, the number of driveways should be reduced.

Wide, ill-defined driveways along Broadway make crossings more difficult for cyclists and pedestrians.

Obstacles in right of way

On Broadway, especially, the trail route faces obstacles in the right of way. These include fencing, mature trees, bollards, poorly defined on-street parking spaces, and utility poles. Strategies to address these include moving utility poles, replacing trees, defining on-street parking, and working with landowners to improve fencing.

Obstacles in the right of way include utility poles, trees, and fencing.

Narrow rights of way with minimum setbacks

On Broadway and Calumet, there are several locations where narrow rights of way coincide with buildings that have minimal or no setbacks. In these situations, lane widths can be reduced, curbs are moved, and on-street parking is reconfigured. Trail amenities such as railings may be added in these cases because medians are less than 5 ft.

Along Broadway and Calumet, narrow rights of way are sometimes complicated by buildings with no setback.

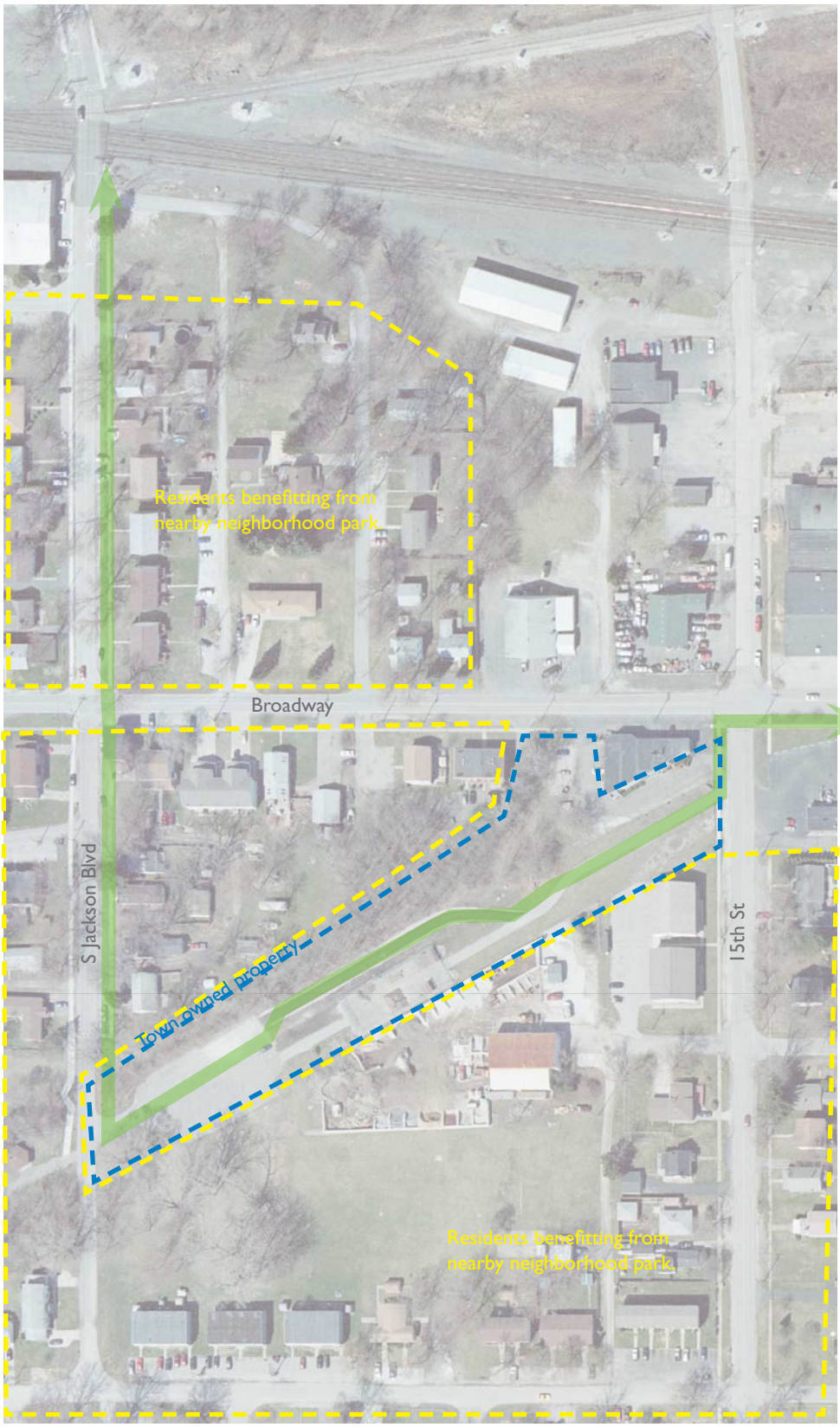
Narrow rights of way with multiple crossings

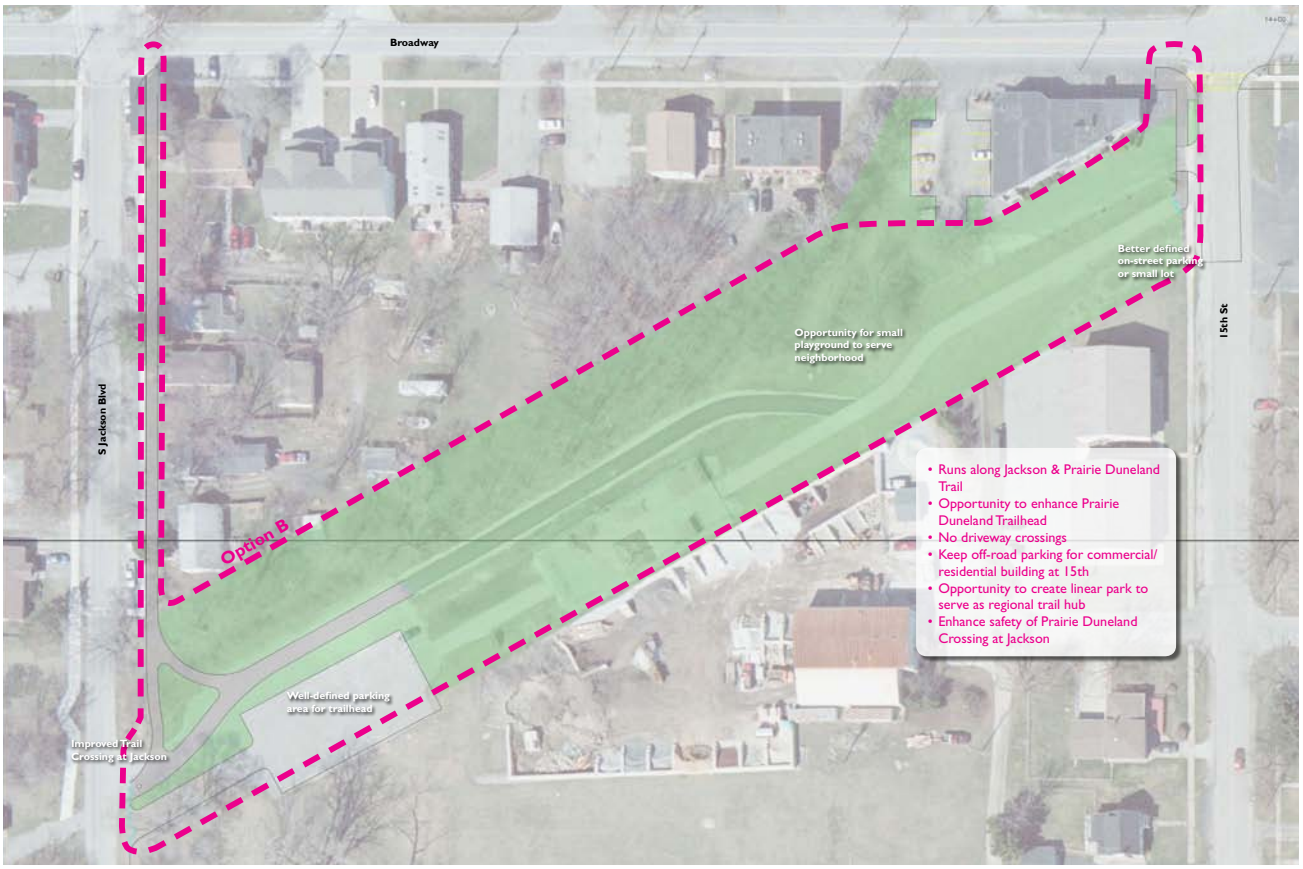
AASHTO guidance indicates that in situations where sidepaths cross multiple streets and drives, such as on Broadway and Calumet, and there is no way to accommodate dual one-way shared use paths, that a practical alternative to improve roadway conditions for cyclists should be explored. Throughout the trail, the addition of bike lanes or sharrows, as shown below, will enhance safety of trail users. While some riders, particularly novices, will continue to use the shared use path, riders with greater confidence and speed are encouraged to use marked on-street facilities. The inclusion of bike lanes and sharrows along the trail will help make the roads the DK travels "complete streets."

Bike lanes should be accommodated where widths allow. Photo courtesy of www.completestreets.org.

In narrower streets, shared use arrow markings, or sharrows, indicate to cyclists and motorists that the road is meant to be shared. Photo by Will Sherman courtesy of cityphile.org.

S Jackson Blvd & Prairie Duneland Trailhead





The proposed Dunes Kankakee Trail through Chesterton begins where Porter's Brickyard Trail and the regional Prairie Duneland Trail end. This confluence deserves special attention. The construction of Chesterton's DK provides an opportunity to enhance the rail crossing at S. Jackson Blvd for greater safety. It also creates an opportunity for an enhanced regional trailhead on town-owned property. This trailhead should include parking and bicycle facilities. It could also accommodate a neighborhood-scale park for Chesterton residents and trail users.

The existing start of the Prairie Duneland Trail is easy to miss. This is a prime location for improved parking and the addition of urban design elements.

In Lansing, Illinois, the Pennsy Trail trailhead on Ridge Road features many urban design elements. Photo courtesy of Trails for Illinois.

15th St to 12th St

At the intersection of Broadway and 15th, recommendations include updating all four corners to include appropriate urban design elements, the addition of crosswalks, and wayfinding signage for improved regional trailhead.

From 15th St to 12th St, utility poles must be moved, and on-street parking should be reconfigured. Site design for specific off street lots is recommended with the goal of reducing superfluous driveways and defining the trail. Many trees will also be replaced.

Intersections along the Indianapolis Cultural Trail are enhanced with pavement colors and textures, signage, lighting, and landscape for safer crossings.

12th St to 9th St

From 12th St to 9th St, trail must be well defined from off-street parking. In some cases a site design for off-street lots is warranted with the goal of reducing parking spaces that back out onto the trail and Broadway. Most trees will need to be replaced. Cooperation from adjacent landowners for specific improvements within and at the edge of public rights of way must be sought.

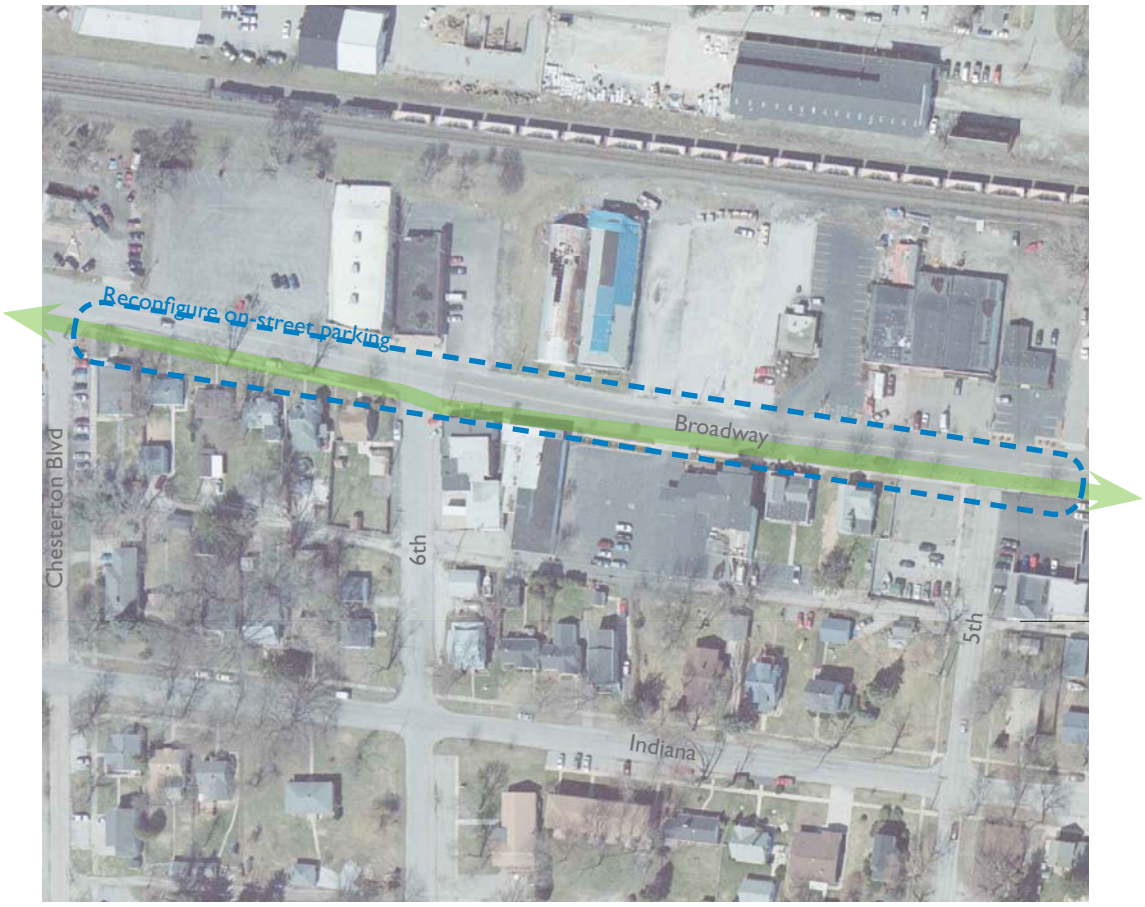
Site designs for off-street lots may increase efficiency of existing parking area and enhance safety of trail users.

9th St to Chesterton Blvd

The parking lot across from Town Hall will benefit from a site design to increase parking capacity and beautify the block.

From 9th St to Chesterton Blvd., off-street parking lots will benefit from site design that better defines their entrances and makes the best use of available space with pavement and striping. Intersections will be improved through reduction in radii and narrower lanes. As throughout the trail, utility poles will need to be moved and several trees replaced.

Chesterton Blvd to 5th St



From Chesterton Blvd to 5th St, the trail should expand from 10 ft to 12 ft in order to provide a buffer against cars parked on-street. Broadway will need to be narrowed in this section. On-street parking will need to be better defined. Again, utility poles must be moved and trees replaced.

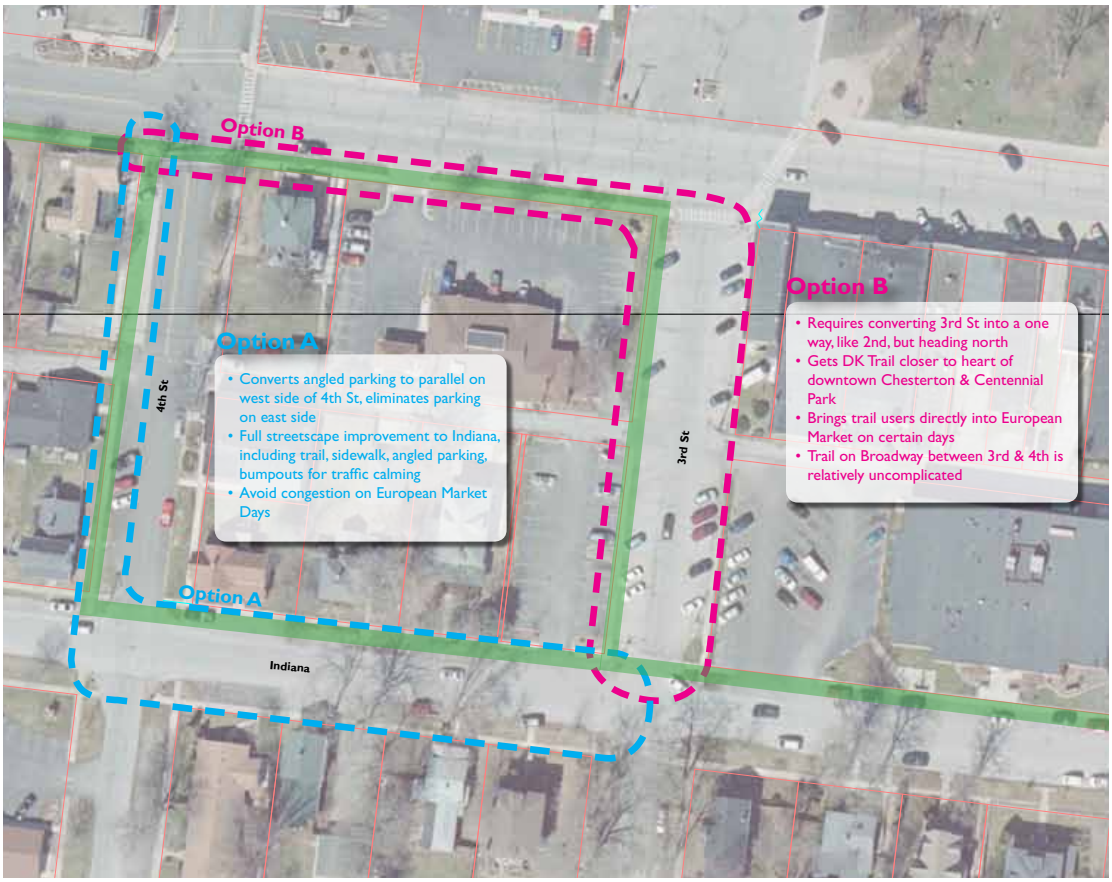
On-street parking can be redesigned for more efficient use while enhancing the aesthetics of the trail and street.

5th St to Indiana & 2nd St

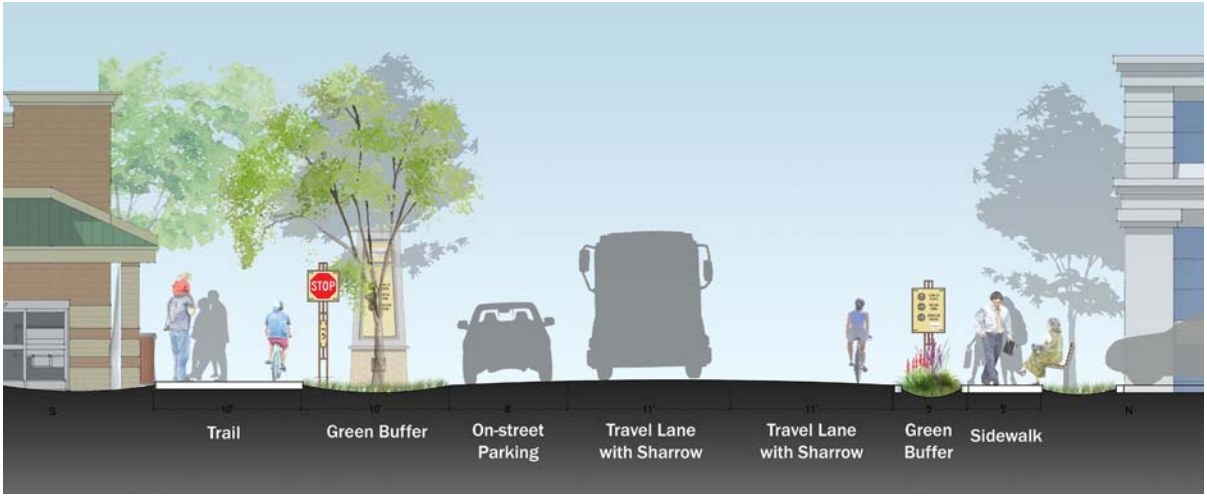
By the time the trail reaches 5th St., it begins to integrate more with the downtown core. In this section, on-street parking will need to be reconfigured and trees will need to be replaced.

Although 2nd St was identified in the last public meeting as the preferred way to connect Broadway with Indiana, closer inspection proves it unfeasible to accommodate a separated facility within the available right of way. On the reverse page, two alternatives are proposed in 4th and 3rd Streets, with a narrower linkage providing access to Centennial Park via 2nd St. A crossing at 4th St. requires more investment in Indiana, which may not be as valued as investing in another block of streetscape along Broadway and a crossing at 3rd St. Enhancement of 3rd St. could benefit the popular European Market. Crossing at 3rd, however, requires turning the existing 2-way street into a one-way running opposite to 2nd St.

In Frankfort, Illinois, the Old Plank Trail becomes part of the many downtown festivals.



Explanation of 3rd and 4th St. linkage alternatives

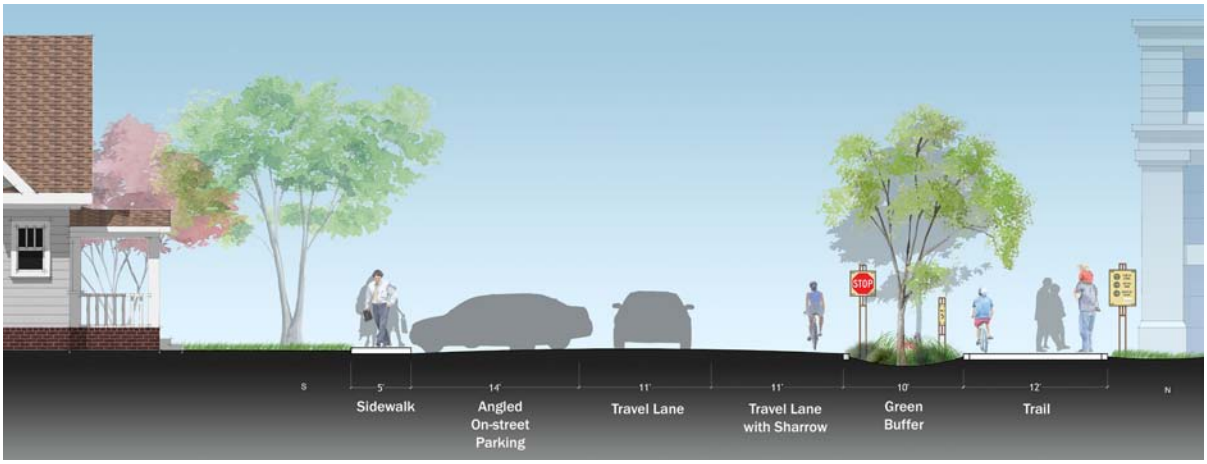


Typical proposed cross section for Broadway with grade separated trail on the south side of the street.

Indiana & 2nd to Calumet & Porter

Typical existing conditions on Indiana

Typical existing Conditions on South Calumet



Typical proposed cross section for Indiana, with grade separated trail on the north side of the street

Regardless of whether 3rd or 4th St is chosen to connect to Indiana, at least two blocks of Indiana will require considerable improvements to accommodate the trail, buffer, sidewalk, parking, and two travel lanes. If 3rd St is chosen, Broadway will be improved by one additional block instead of Indiana, which may be a wiser use of limited funds.

Two connector pieces are key in this segment; one utilizing 2nd St to connect to the heart of Centennial Park, and the other to traverse Lois Lane into Coffee Creek Park. These connectors are envisioned as auxiliary spurs to the main DK trail, helping to link it with important downtown amenities.

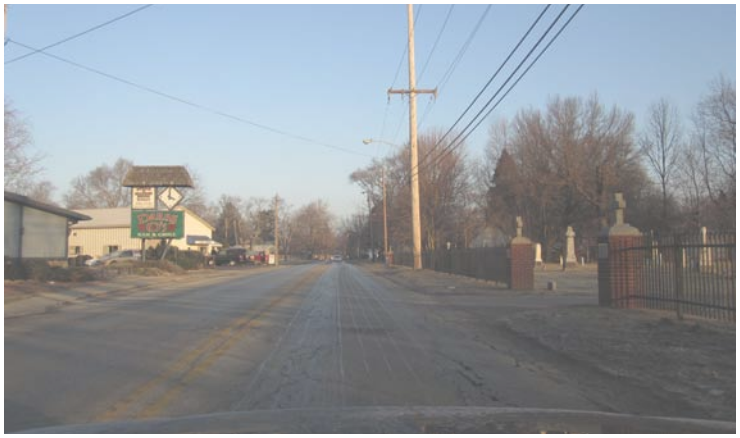
Until the short but complex section along Indiana is built, the recommended phasing strategy includes utilizing one-way bike lanes or sharrows along both Indiana and Morgan Avenues to connect S. Calumet Rd with either 3rd St or 4th St. Splitting the trail into two one-way segments keeps cyclists moving in the direction of traffic.

Calumet & Porter to CR 100

South Calumet has one of the more narrow rights of way along the route. Other complicating factors include utility poles, trees, and driveways.

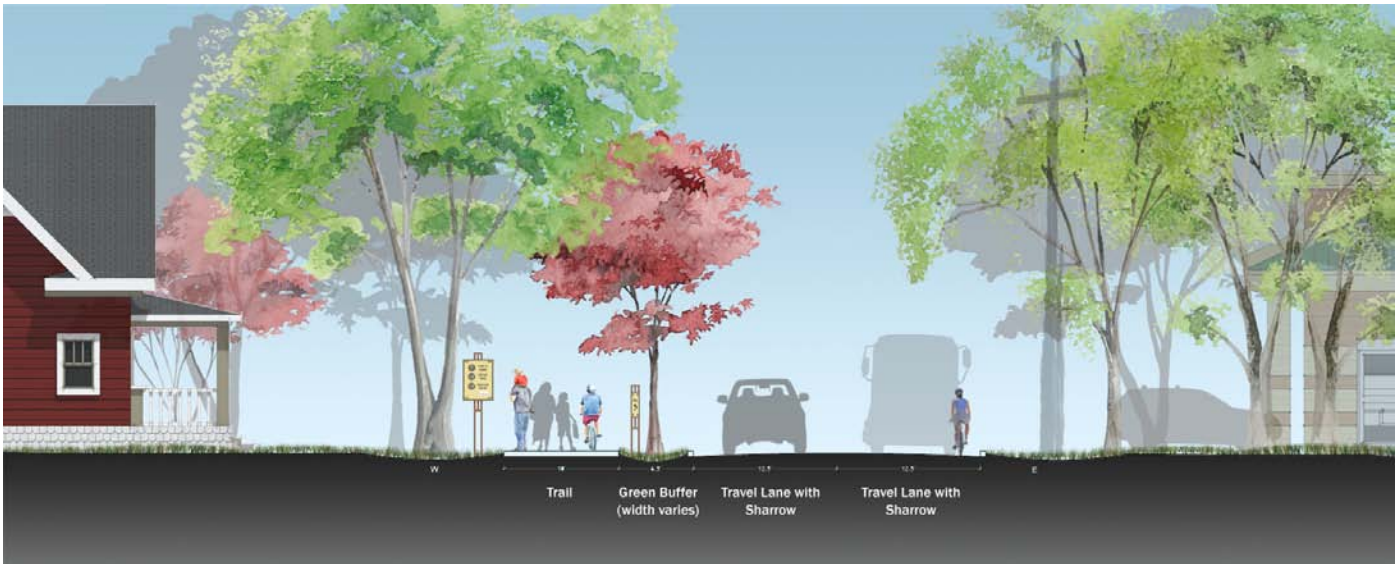
South Calumet between Porter Ave and the newly updated business district is expected to be updated in a fashion similar to the business district within the next six years.

Calumet from Porter to CR 100


South Calumet pinch at Danny O's and St. Patrick's Cemetery

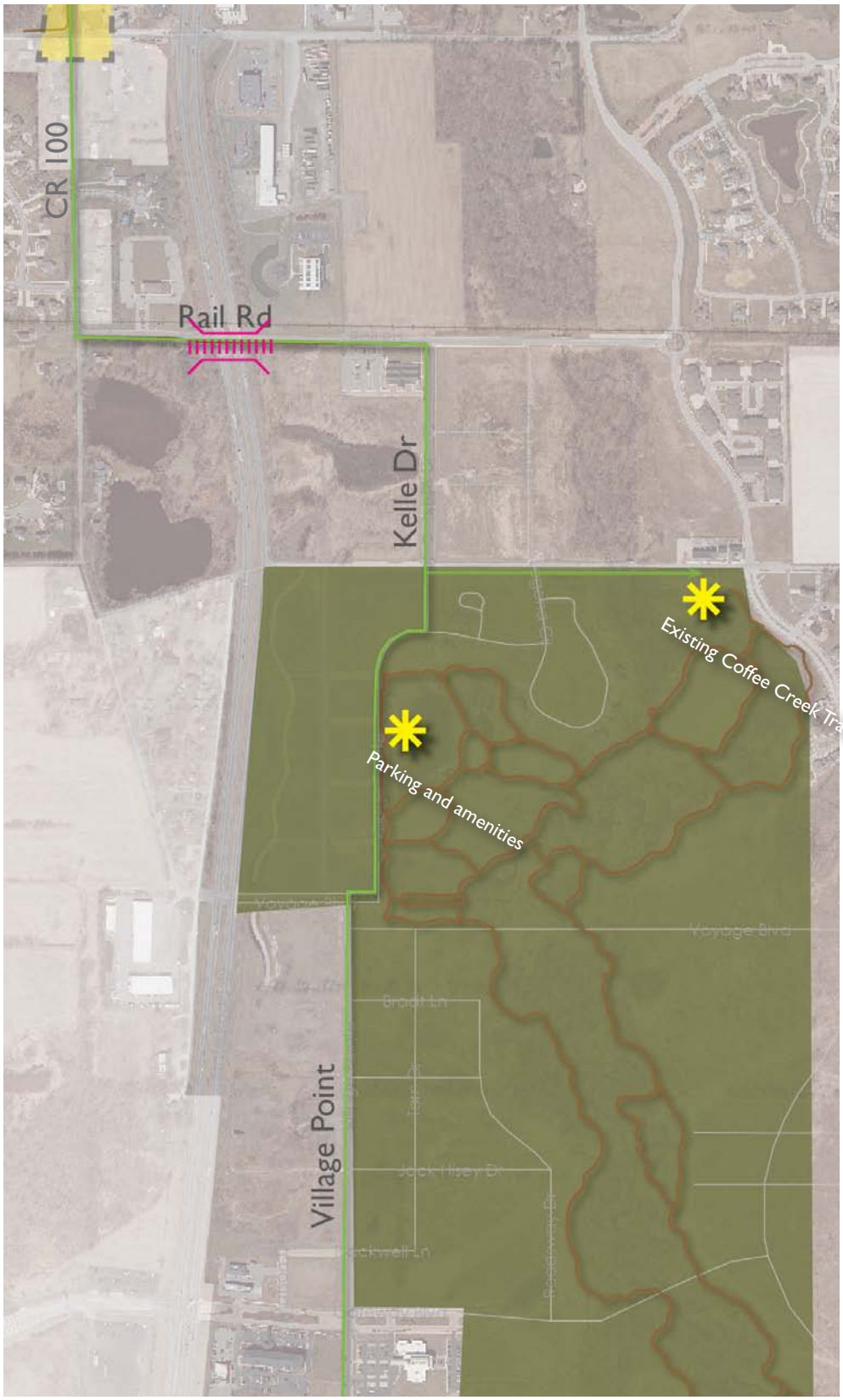

South Calumet Business District, recently reconstructed

Typical existing conditions at South Calumet



Typical proposed cross-section for South Calumet, showing a 10' trail on the west side of the road and travel lanes with sharrows.

CR 100, Rail Rd, Kelle Dr, and Village Point



Typical existing conditions on Kelle Dr

After exiting the South Calumet Business District, the trail heads south along the west edge of County Road 100 East, picks up Rail Rd going east, then continues south onto Kelle, and Village Point through Coffee Creek Watershed Preserve.

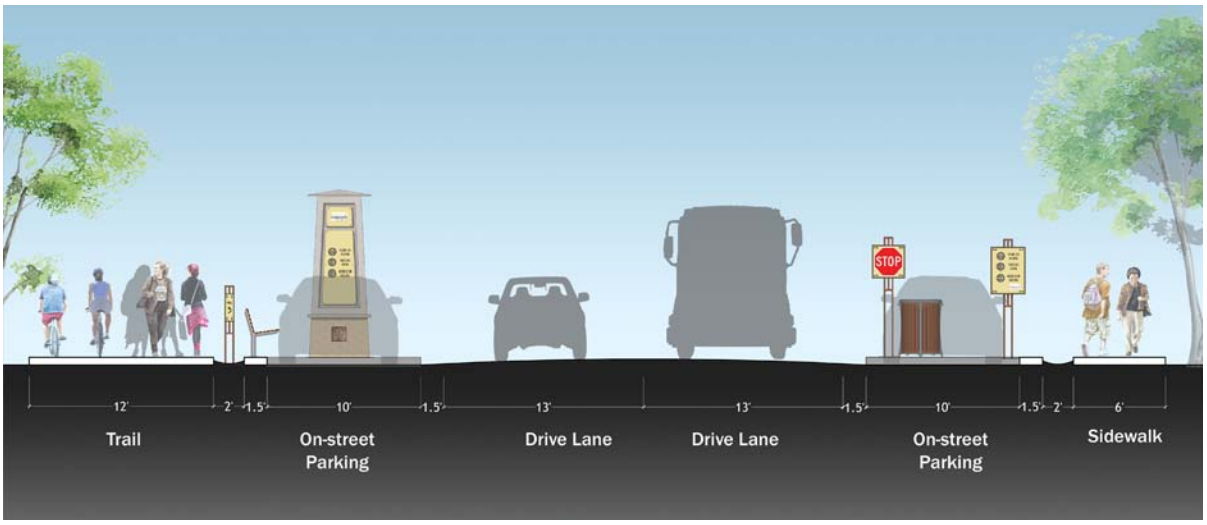
On CR 100E, rights of way vary from 0-80 ft due to county property lines extending to the road center line, however it appears from county GIS data that ample easements exist on both sides of the street. Coordination with landowners will be required, as some landscape currently extends into the easement. The treatment of Rail Rd requires expanding the existing sidewalk. Kelle Dr and Village Pt have wide travel lanes and ample rights of way to accommodate a sidepath, sidewalk, and on-street shared lanes.

Typical existing conditions on CR 100 E

Typical existing conditions on Rail Rd

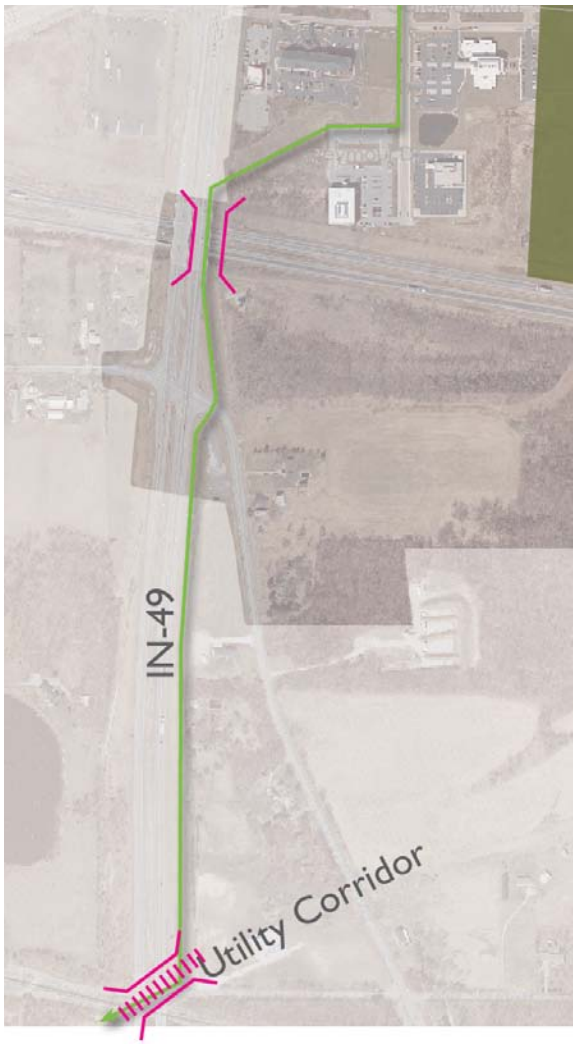
Typical existing conditions on Kelle Dr

Typical existing conditions on Village Pt



Typical proposed cross-section for Kelle Dr and Village Pt

Off-Road route from Village Point to IN-49 to Utility Corridor Underpass



Proposed alignment for Route 3 along IN-49

At the southern edge of the Coffee Creek Watershed preserve, the trail cuts over to the right of way east of IN-49. The route shares the IN-49 overpass of I-90, then runs parallel to IN-49 as far east as possible within the 120' right of way. The trail will descend to meet CR 900, passing under IN-49 to meet the utility corridor that extends southwest through US-6.

The route terminates just outside Chesterton's municipal boundary at the IN-49 underpass at CR 900. This prospective terminus allows for flexibility during a later planning stage, when Porter County and Valparaiso connect their legs of the Dunes Kankakee Trail to Chesterton's portion.

Challenges in this segment include private property at the southern edge of the Coffee Creek Watershed Preserve and the safe crossing of Calumet Rd.

Enlarged Typical Proposed Section for Off-Road, At-Grade Trail, as specified for the utility corridor

The Alternate Northern Through Route

Northern leg featuring off-road, creekside, and North Calumet segments. This section requires engineering in several locations to address grade separated crossings of rail, creeks, and streets.

The northern through route of Chesterton's DK has been carried forward through the feasibility study process as an alternate route to be pursued at a later date. This 2.5 mile segment has several desirable qualities, including a majority off-road grade separated travel and a quiet, natural, scenic character. It provides a more direct connection with the DK segment from Dunes State Park.

This segment was not urgently desired because of lower connectivity with Chesterton's downtown business district, high estimated construction costs, and low compatibility with known funding sources. Costs are driven up by the necessity of constructing four grade separated crossings and a long length of boardwalk to traverse wetlands between Indian Boundary Rd and Coffee Creek Park.

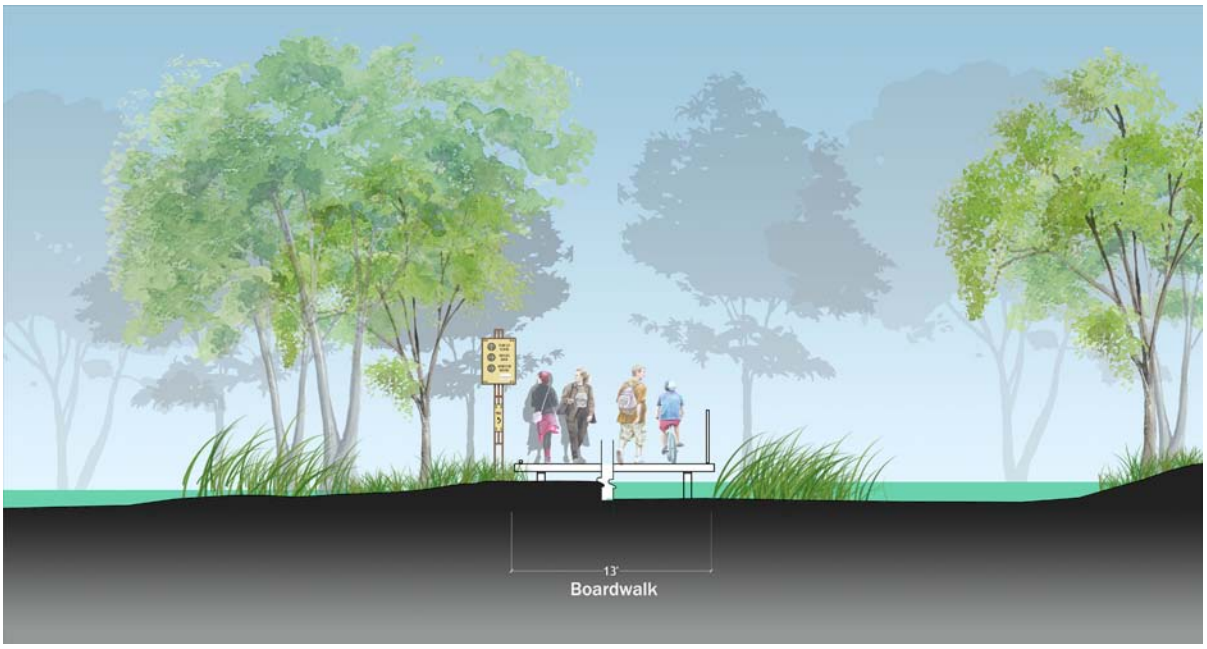
The construction of the Through Route in Phase 4 will turn the Broadway Route into the local business connector.

Description of existing conditions and recommended treatment for each condition.

	Road	Typical ROW	Segment Length (ft)	1 or 2 Way	On-Street Parking	Existing sidewalk	Traffic Speed	Traffic Volume	Obstructions in ROW	Suggested Cross-Section
Northern Leg: Coffee Creek Route (Long Range Goal)	**Off-Road**	X	6,690	X	X	X	X	X	Private Property	Off-road, some boardwalk
	N Calumet	60'-85'	2,510	2	X	5' on both sides in portions	35	low	Utility poles, trees, driveways	Half streetscape
	Coffee Creek	X	3,590	X	X	X	X	X	Private Property, wetlands, and three major underpasses	Off-road, nearly all boardwalk
	Lois Lane	66'	745	1	90 deg on North, parallel on South	X	10	low	Haphazard parking	Trail within ROW

One grade separated crossing under rail and over Coffee Creek just north of Indian Boundary Rd.

Another rail/creek crossing, this one at the northern boundary of Coffee Creek Park.



Typical proposed cross section for boardwalk in wetland areas.

Implementation Measures & Cost Estimate

This study identifies many potential elements of the proposed DK Trail that will make it attractive for funding assistance. These elements include:

- Quality of Life – improved access to regional trails, parks, Lake Michigan and residential and business districts.
- Streetscaping - landscaping and beautification
- Mobility Improvements – pedestrian and bicycle paths, ADA improvements, complete streets, wayfinding and signage.
- Reduced Air Pollution.
- Roadway, safety and stormwater improvements.
- Economic Development.

Additionally, a sound phasing strategy will help break the most expensive portions of the trail into smaller, more achievable projects.

Federal Funding Opportunities

The elements listed above are specific to the goals of several federal funding programs, such as Congestion Mitigation and Air Quality (CMAQ), Transportation Alternatives (TA), and Surface Transportation Program (STP). Ensuring that the planned trail incorporates these elements will increase non-local funding opportunities for implementation.

Awards per funding cycle for these programs are limited, but may be obtained repeatedly over multiple funding cycles. CMAQ, TE, and STP programs typically require a twenty percent local match.

CMAQ

The CMAQ program supports two goals – improving air quality and relieving congestion. Projects that provide alternative transportation opportunities, incorporate complete streets, improve mobility and connectivity and encourage development around existing infrastructure are favored by this program. CMAQ is typically an annual program.

CMAQ also provides special funding for bike racks on public property. The "Rack 'em Up" program could be used to offset costs of proposed trailheads at the intersection of the DK and Prairie Duneland, the library, Centennial Park, and Coffee Creek Park (accessed through Lois Lane).

TA

The TA program (formerly TE, or Transportation Enhancement) offers funding opportunities to expand transportation choices and enhance the transportation experience. Funded activities include those related to surface transportation like pedestrian and bicycle infrastructure and safety programs, scenic and historic highway programs, landscaping and scenic beautification, historic preservation, and environmental mitigation. TA is typically an annual program.

The fact that the Town is already utilizing TA Funds for the Westchester Liberty Trail should not affect eligibility for TA funding for the DK Trail, as many communities receive TA funds for multiple projects simultaneously.

STP

STP funding focuses on relieving traffic congestion; improving roadway safety, efficiency and mobility; and protecting the environment.

Individual projects are scored based upon pre-determined scoring criteria. Those projects that receive the highest scores and are found eligible by INDOT and FHWA can receiving funding. STP is typically distributed bi-annually.

Utilities as Leverage for Local Match

Matching funds can be obtained with the help of the local Utility. By timing trail construction to coincide with needed stormwater and sanitary improvements on key segments of the proposed trail, utility improvements can help offset trail construction costs.

Because the route on Broadway requires moving many utility poles, coordination with NIPSCO during this process may provide opportunities to fund moving the infrastructure away from the street, either into the rail corridor or underground.

Other Non-Local Funding Sources

The Regional Development Authority (RDA) has been assisting communities with infrastructure projects that produce economic development opportunities. The proposed enhancements to the Broadway and Calumet business districts may make this trail project more attractive to the RDA, based on their desire to fund business improvement districts like these as regional economic development.

There is some potential that the trail crossing at Jackson may qualify for INDOT Rail-Highway Crossing Program funds (Section 130). These funds typically fund warning lights, bells and gates. These funds can be difficult to obtain; INDOT typically only funds 20-25 rail crossing improvement projects per year and there are over 6,000 rail crossings in the state. However, even if INDOT does not select a particular project, many times local agencies have obtained funds directly from the railroad owner for safety improvements at trail crossings.

Other types of funding sources intermittently become available. For instance, in 2010 NIPSCO partnered with the DNR to make maple trees available through a tree grant. A grant like this can offset costs of replacing trees along Broadway and Calumet. Additionally, as Chesterton has done before, individuals and businesses may sponsor trail amenities like benches, pavers, or trash cans. Furthermore, grants from the US Department of Energy have been available to replace light fixtures with new energy efficient models.

Estimates and Phasing

On the following pages, a cost estimate lays out a three phase strategy for completing the proposed full build-out of Chesterton's DK Trail. The first phase, with a base cost under $2 million, provides the quickest and least expensive way to get the trail safely open. This phase heavily relies on on-street striping of bike lanes and shared road markings. Phase 1 affects the entire 5.5 miles of the proposed route and averages out to about $325K per mile.

It is recommended that the engineering design for all phases of the trail be complete before construction of phase 1. The cost estimates provided are based on the assumption that the town designs the trail once, but builds it over time. In this way, the construction completed in phases 2 or 3 does not redo what has been completed in earlier phases. This is especially important on Broadway, where phases 2 and 3 split construction of the trail and streetscape into southern and northern halves. In

Existing conditions, recommended treatment, and cost estimate broken down by phases.

Road	Typical ROW	Segment Length (ft)	1 or 2 Way	On-Street Parking	Existing sidewalk	Traffic Speed	Traffic Volume
Jackson	66'	1125	2	parallel shoulder parking, E&W sides	E&W Broadway to Porter	25	low
Prairie Duneland Connector	X	870	X	X	X	X	X
Broadway	66'	4050	2	Parallel on S side of street from 6th to 3rd, Angled on N & S 3rd to Calumet	S side only to 3rd, then both	20	high
4th or 3rd	66'	300	2	Angled Broadway to Indiana, parallel S	E&W	25	low
Indiana	66'	890	1	Parallel, both sides	N&S Calumet to 6th, N only W of 6th	25	low
Calumet 1 (Indiana to Porter)	57-62'	1,135	2	E&W parallel from Broadway to Porter	E&W, 8'-12'	35	high
Calumet 2 (Porter to New Construction)	25-55'	3,240	2	X	E&W Porter to Jefferson, W only Jefferson to Post Office, E only Post office to Abbey Ln, 5'	35	high
Calumet 3 (Business District)	40'-75'	1,790	2	X	E&W Abbey to Beverly, W only Beverly to 1100 N, 5-8'	35	high
CR100E	0-80'	1,525	2	X	X	35	high
Rail	60-80'	1,755	2	X	S side only	30	low
Kelle Dr	75'	1,480	2	Parallel w/bump-outs	E&W sides	20	low
Village Point	75'	4130	2	Parallel w/bump-outs	E side only	20	low
Off-road connector	X	840	X	X	X	X	X
IN-49 (to utility easement)	75'-120'	6000	1	X	X	60	high

order for phase 3 to be cost efficient, phase 2 construction must work seamlessly with construction in phase 3.

The second phase tackles the bulk of the construction of sidepaths (separated shared-use facility adjacent to roadways) along the route and is the most expensive phase, totalling approximately $3.5 million. This phase affects 3.5 miles of the proposed route at a per mile cost of just under $1 million.

The third and final phase affects only Broadway, serving to complete the northern half of the streetscape begun on the south side of the street in phase 2. This phase is estimated to cost just over $1 million. Because the Broadway streetscape is the most complicated and expensive portion of the trail, this phase carries the highest per mile cost, averaging $1.3 million per mile.

Obstructions in ROW	Suggested Cross-Section	Approx. Cost per FT	Phase 1 Approximate Cost	Approx. Cost per FT	Phase 2 Approximate Cost	Approx. Cost per FT	Phase 3 Approximate Cost	
Trees, residential parking, utility poles	Half streetscape	$120	$135,000					
X	Off-road trail with improved trailhead	$150	$130,500					
Frequent driveways, trees, utility poles	1. Sharrows 2. Half Streetscape 3. Complete Streetscape	$20	$81,000	$250	$1,012,500	$250	$1,012,500	
Utility poles	1. Sharrows 2. Full streetscape	$20	$6,000	$400	$120,000			
Occasional trees & driveways	1. Bike lanes or sharrows (Indiana & Morgan) 2. Full streetscape	$20	$17,800	$400	$356,000			
Occasional utility poles, frequent driveways	1. Sharrows 2. Full streetscape	$20	$22,700	$500	$567,500			
Existing mature trees, occasional driveways	1. Sharrows 2. Half streetscape	$20	$64,800	$150	$486,000			
Utility poles on E side, occasional driveways	1. Sharrows 2. Enhance existing	$20	$35,800	$200	$358,000			
trees	1. Bike lanes 2. Trail within right of way	$80	$122,000	$80	$122,000			
X	Expand existing sidewalk	$20	$35,100					
X	1. Bike lanes 2. Expand existing sidewalk	$20	$29,600	$120	$177,600			
X	1. Bike lanes 2. Trail within right of way	$20	$82,600	$70	$289,100			
X	X	$150	$126,000					
X	Trail within right of way	$150	$900,000					
			base cost $1,788,900		***additional* $3,488,700**		***additional* $1,012,500**	**TOTAL COST $6,290,100**

Next Steps

The Feasibility Study summarized in this report is the first step in creating Chesterton's portion of he Dunes Kankakee Trail. The Study identified a preferred trail alignment through the Town of Chesterton, shown at right, and lays the foundation for the next steps in realizing the trail—funding acquisition, engineering design, and construction. The following is a recommended sequence for implementing Chesterton's DK Trail:

1. The first step going forward is to immediately begin seeking funds for both design and construction, using sources on pages 38-39 as a guide. Additionally, to help with fund raising, the early establishment of a "Friends of the Dunes Kankakee Trail" group or equivalent is recommended.

2. As soon as funds are available, hire an engineer to complete the design. Having the design in place will be valuable to guide projects in the study area that could help build segments of the trail as construction funds—trail specific or otherwise—become available.

3. Begin raising awareness of the DK Trail corridor through organized rides, special events, and dialog with the active transportation community.

4. Striping recommended in Phase 1 should be done as soon as possible to link the lakefront to downtown Chesterton. Providing this connection will energize downtown and help build momentum for subsequent construction phases.

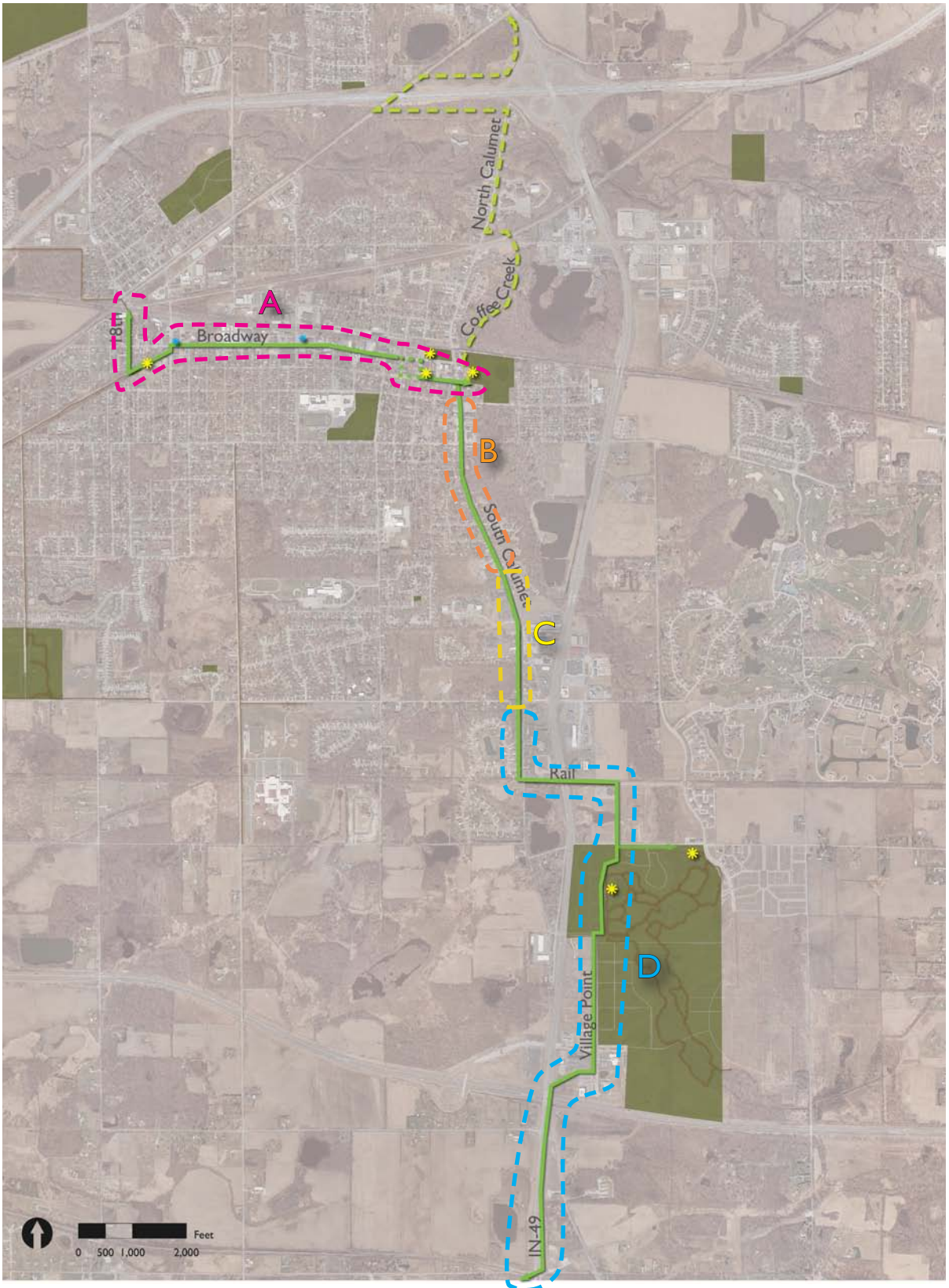
A "friends" group for the trail can be beneficial financially and will raise needed awareness and support to make the trail a success. Other regional trails, such as the Calumet-Sag Trail in Illinois, have received necessary local matches for grants through the efforts of their friends group. In Bloomington, Indiana, the "B-Line Backers" raise funds for the B-Line Trail by sponsoring benches and planters. For more examples of what these trail support groups have done, see: http://calsagtrail.org and http://bloomington.in.gov/b-line.

As discussed earlier, funding for trail construction should be timed to coincide with planned utility and streetscape improvements, such as the planned extension of the South Calumet District north of the Post Office (B). This timing will be key to demonstrate the local match required by many funding sources.

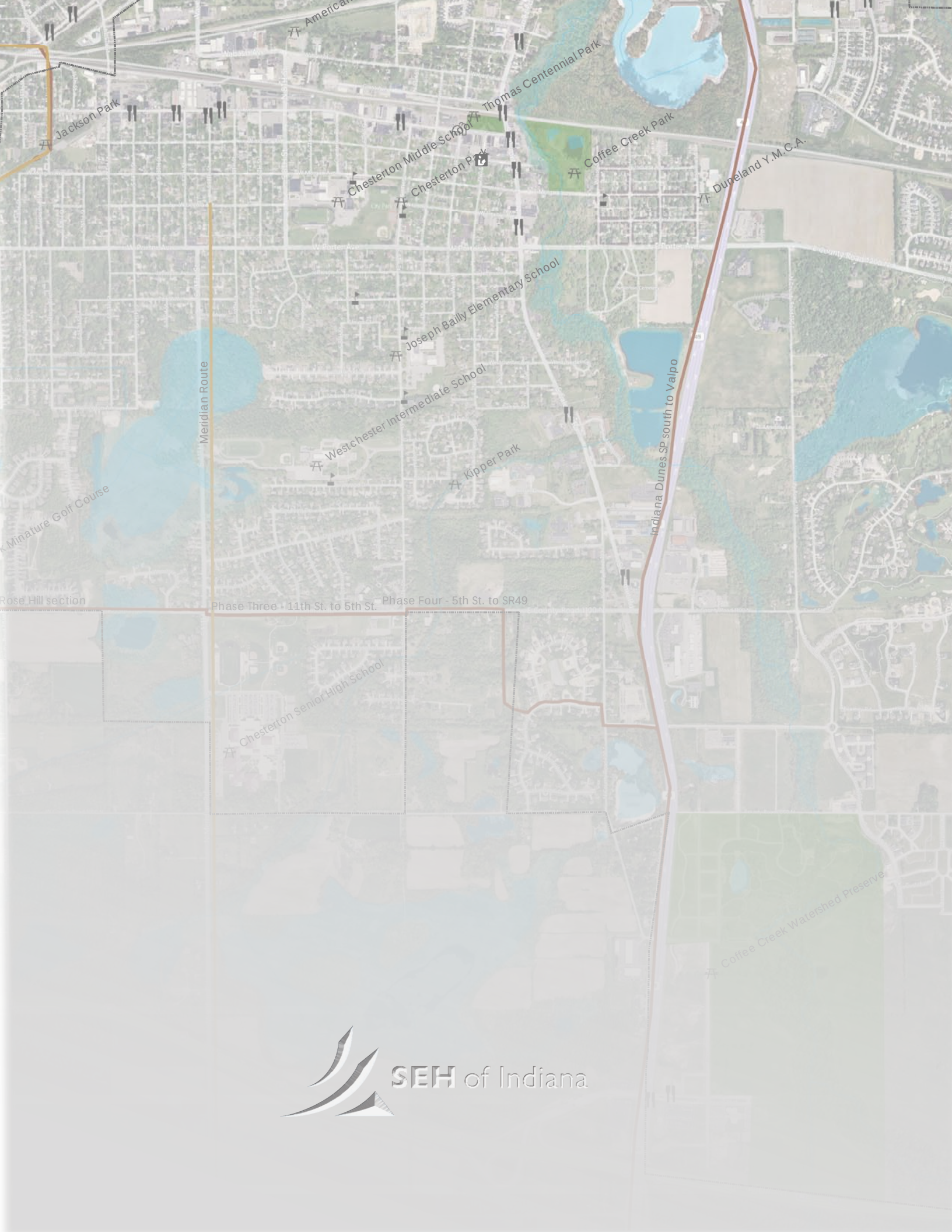
The phasing strategy recommended for construction advocates for a quick opening of the trail by first striping or painting sharrows in the more complicated corridors (A, B & C) and constructing the separated facility only on corridors requiring minimal interventions (parts of D). The second phase builds out half of the more complicated streetscapes (A, B & C) and the full separated facility in the less complicated corridors (D). The third phase finishes the half streetscape (A).

Although the construction of the trail has been divided into three phases, the engineering design of all three phases should be complete before construction begins. This will ensure continuity of design and avoid duplicating construction costs. Certain sources are more likely to fund engineering design, such as the Lake Michigan Coastal Program.

Grant cycles and funding availability will in large part guide the timing of trail implementation. However, expeditious action on the part of the Town to seek out and evaluate funding opportunities and hire engineers for trail design will help move the process forward and maintain the momentum built up through the Feasibility Study process.



Preferred route for Chesterton's Dunes Kankakee Trail, broken down into four logical segments.


Jackson Park
Thomas Centennial Park
Chesterton Middle School
Chesterton Park
Coffee Creek Park
Dunelend Y.M.C.A.
Joseph Bailly Elementary School
Meridian Route
Westchester Intermediate School
Kipper Park
Indiana Dunes SP south to Valpo
Minature Golf Course
Rose Hill section
Phase Three - 11th St. to 5th St.
Phase Four - 5th St. to SR49
Chesterton Senior High School
Coffee Creek Watershed Preserve
SEH of Indiana