

City of Goshen



COMMON GOOD • UNCOMMONLY GREAT

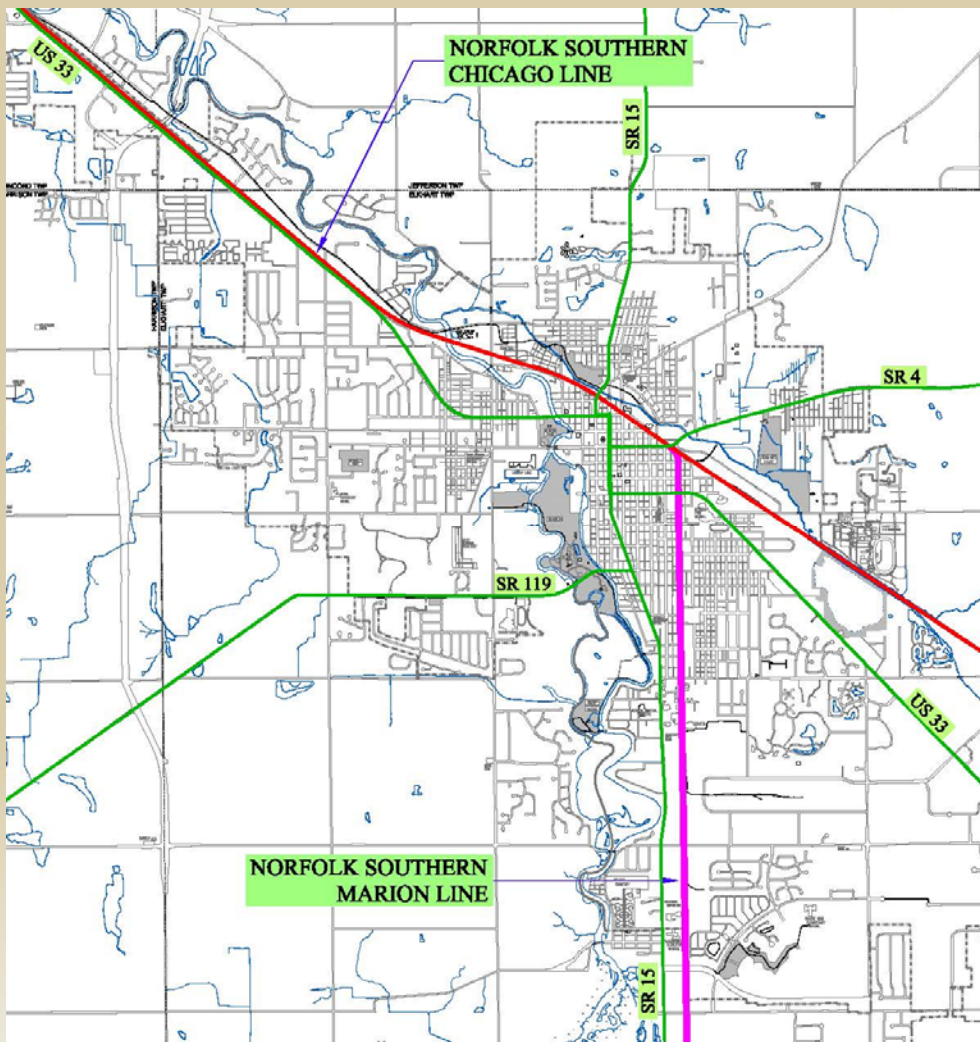
# Quiet Zone

## 2015 Purdue Road School



# Norfolk Southern Railroad Lines

ON GOOD • UNCOMMONLY GREAT



# Richmond Southern Railroad Lines

COMMON GOOD • UNCOMMONLY GREAT



- Elkhart Yard
  - 72 classification tracks
  - 15 receiving tracks
  - 13 forwarding tracks
  - 11 local tracks



# Marion Branch Re-Route Study

COMMON GOOD • UNCOMMONLY GREAT

In 2010, City hired a consultant to conduct a study to re-route the Marion Branch around the City.

## Primary Objectives:

- Improve public safety.
- Reduce traffic congestion and delays.
- Reduce or eliminate adverse community impacts.

## Secondary Objectives:

- Freight Railroad Capacity & Operational Improvements
- Future Economic Development Opportunities

**Initial Price Tag  
\$100M**



# Marion Branch Realignment Study

ON GOOD • UNCOMMONLY GREAT

## Preferred Alternative

Marion Branch Curve Realignment

Grade Separation at US 33

Grade Separation at College Avenue

Quiet Zone on Marion Branch

**Estimated Price Tag = \$38 million**



# Polk Southern Railroad Projects 2015 - 2018

ON GOOD • UNCOMMONLY GREAT

15

Marion Branch Curve Realignment

US 33 North Connector Route, including the RR Grade Separation

RR Grade Crossing Safety Improvements at New York, Burdick, Jackson, Plymouth, Reynolds and Purl Street Crossings

Closure of Ninth Street, Washington Street, and Douglas Street Crossings

16-2018

RR Grade Crossing Safety Improvements at Kercher Road, College Avenue and Jefferson Street Crossings

South Link Road Grade Separation

Apply to Federal Railroad Administration for a Quiet Zone from CR 40 to Lincoln Avenue

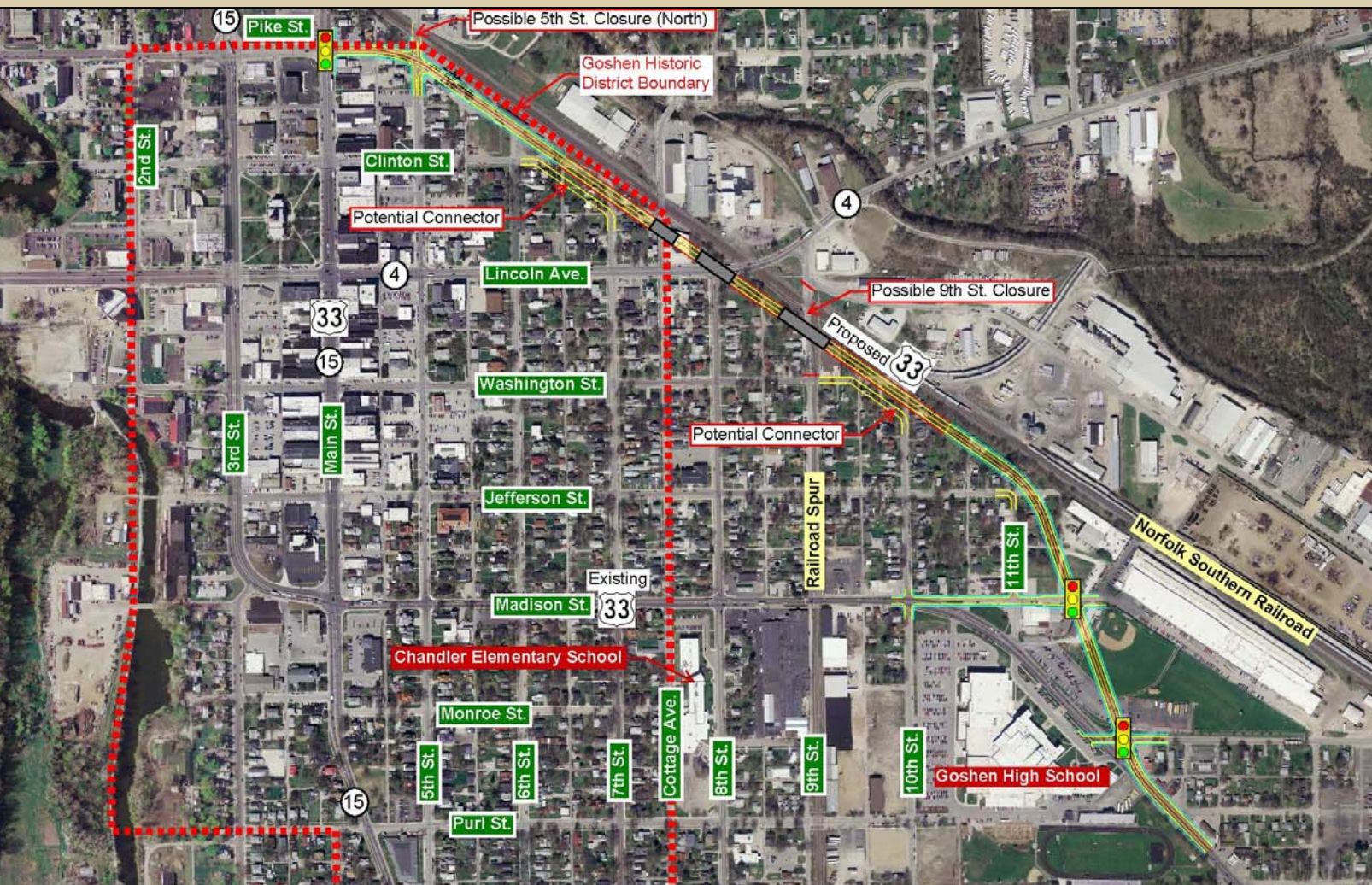
RR Grade Crossing Improvement at Madison Street Crossing

Implementation of the Quiet Zone



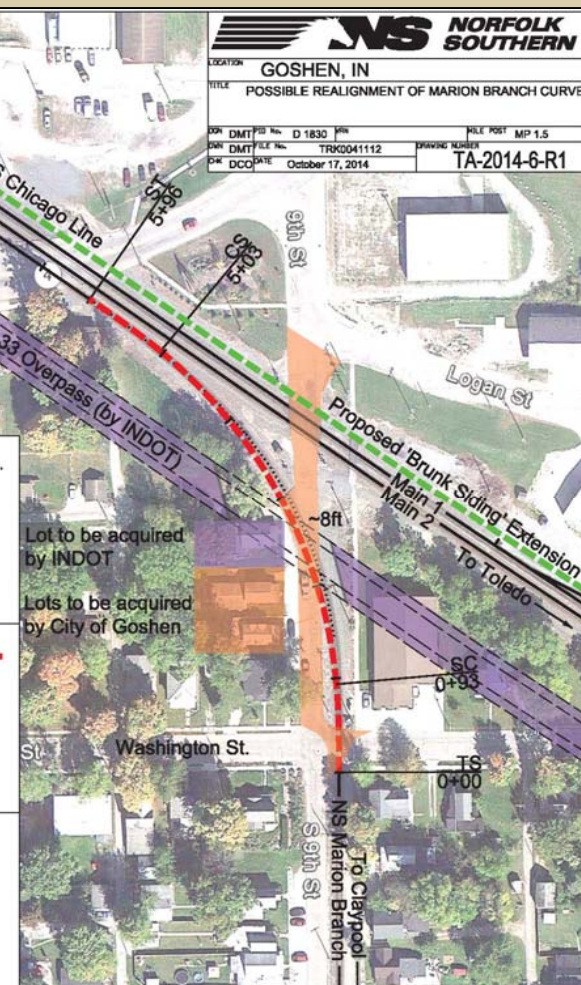
# Highway 33 – North Connector

ON GOOD • UNCOMMONLY GREAT



# Norfolk Southern Marion Line Curve Realignment

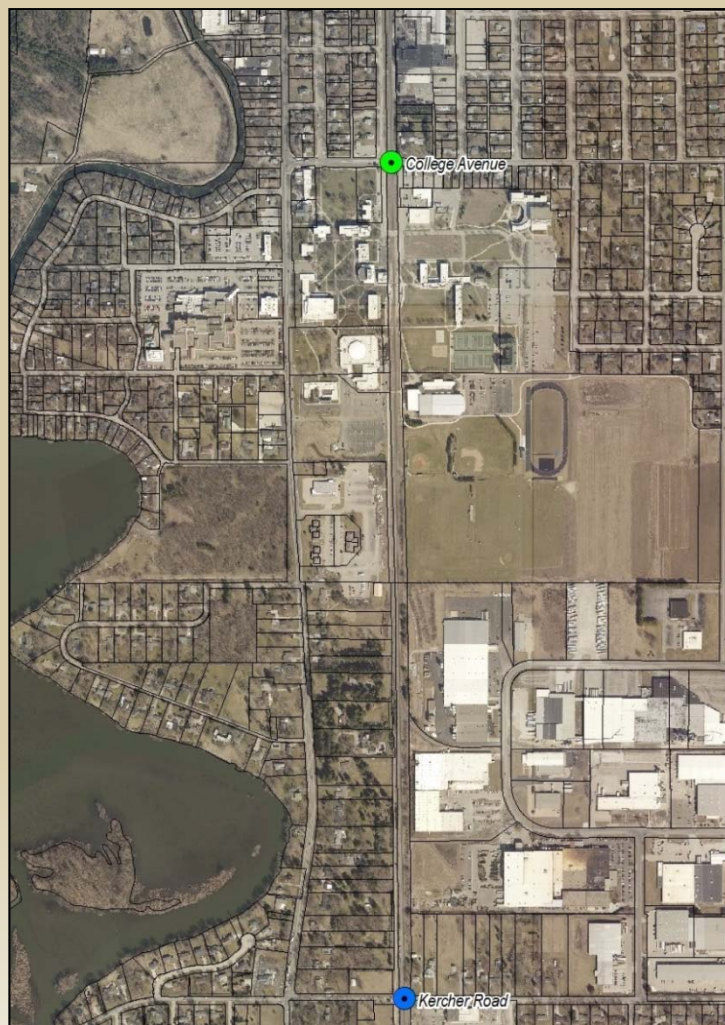
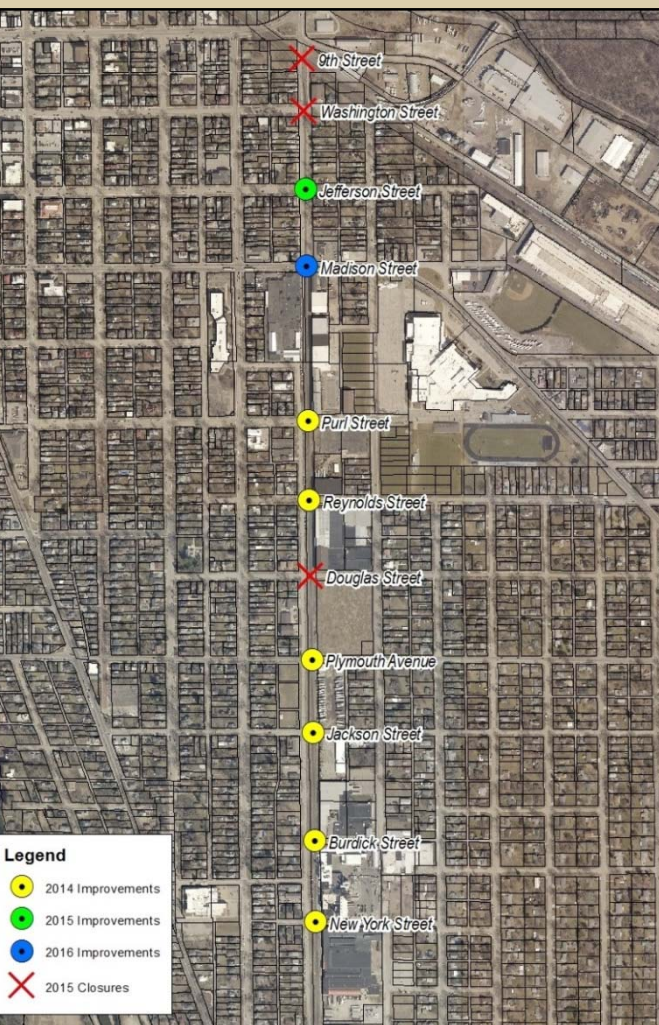
ON GOOD • UNCOMMONLY GREAT





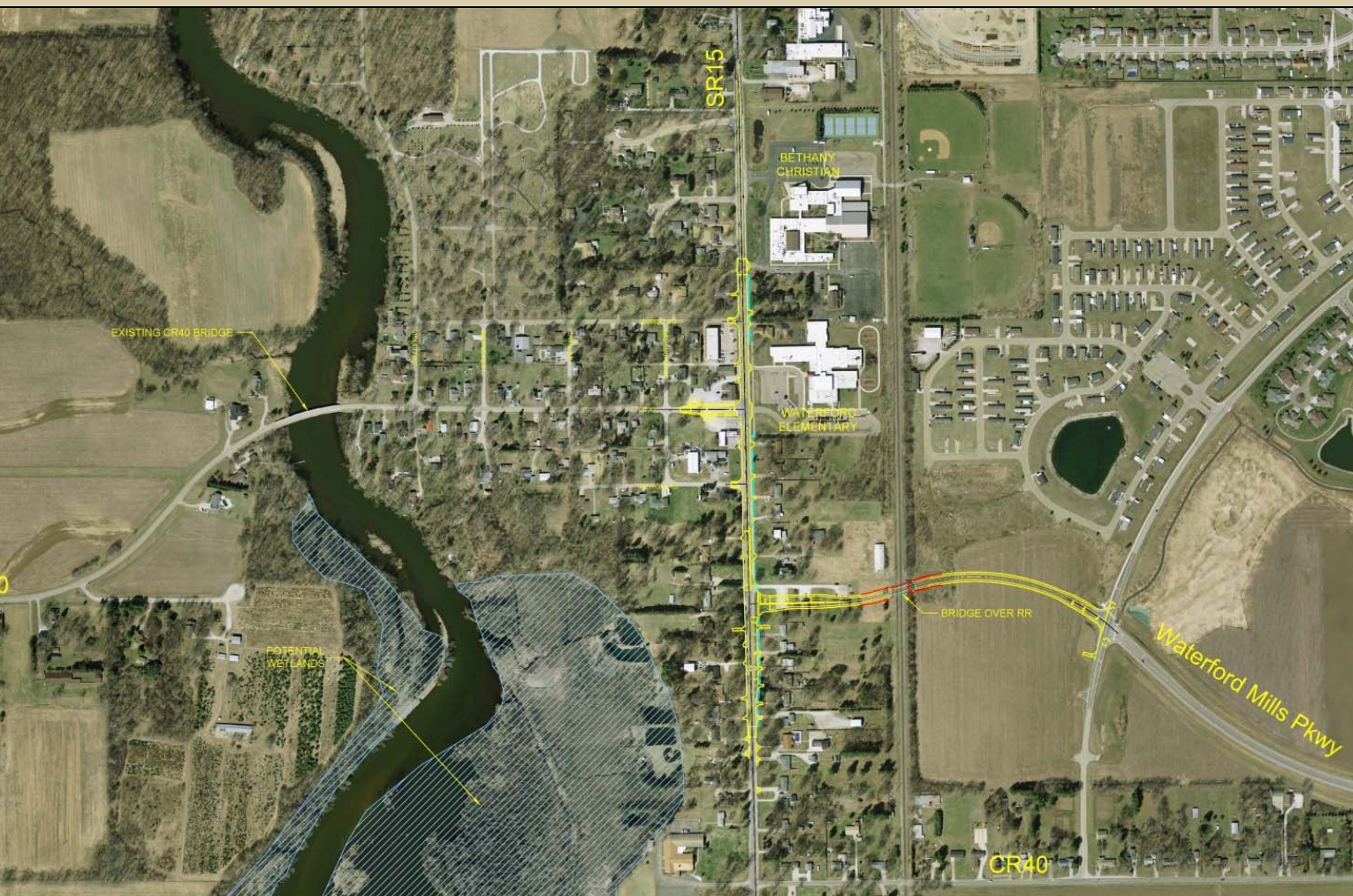
# road Crossing Safety Improvements

ON GOOD • UNCOMMONLY GREAT



# Link Road (Waterford Mills Parkway) Mode Separation

ON GOOD • UNCOMMONLY GREAT



Quiet Zone from CR 40 to SR 4

ON GOOD • UNCOMMONLY GREAT

SHHHH!!!

Be Quiet Trains!!



# History

COMMON GOOD • UNCOMMONLY GREAT

1980's



1994



1991



2005



# et Zone Requirements

ON GOOD • UNCOMMONLY GREAT

## Minimum Length

- 1/2 mile

## Active Grade Crossing Warning Devices

- Flashing Lights
- Gates
- Constant Warning Time Devices
- Power Out Indicators

## Advanced Warning Signs

- “NO TRAIN HORN”

One (1) of the following conditions **MUST** be met:



# is a Quiet Zone Established

ON GOOD • UNCOMMONLY GREAT

Public Authority Designation

- QZRI ≤ NSRT

- QZRI ≤ RIWH

- Install SSM at **EVERY** Public Highway-Rail Crossing

Public Authority Application to RA



# Determining Risk Levels

COMMON GOOD • UNCOMMONLY GREAT

## Risk Index (RI)

(PC), (P(CC|C)), and (P(FC|C))

### Factors

- AADT
- # Trains
- # Highway Lanes
- # Mainline Tracks
- Max. Timetable Train Speed
- Pavement Type
- # Through Trains/Day during daylight hours

Risk Index With Horns =  $RI / 1.668$

## Nationwide Significant Risk Index

Avg. of risk index for all gated crossings nationwide where horns are routinely sounded.



# Diagnostic Review

COMMON GOOD • UNCOMMONLY GREAT

### Diagnostic Team Review

#### PURL STREET

Goshen, Indiana

US DOT Crossing No	Traffic Volume	% Trucks
510040F	1,503 vpd	10

---

Speed Limit: 30 mph

Max Allowable Speed (P/F)	Volume of Trains/Day
35 mph	20

---

**Norfolk Southern**

PM: Clear conditions. Vehicle failed to stop. No injuries.

---

Bus use at the crossing:  Yes  No

Trucks consolidated?  Yes  No

---

Condition:  Excellent  Good  Fair  Poor  Very Poor

Surface Condition:  Smooth Surface  Well Graded  Free Draining

Number crossing surface (poor): 2

Grade and/or track alignment create issues for road users?  Yes  No

Patrick Engineering, Inc. | 450 Vale Park Road, Suite F | Valparaiso, IN 46385 | T:219-413-7103 | F:219-413-7101 | www.patrickco.com

### Diagnostic Team Review

Comments: \_\_\_\_\_

Are the tracks in superelevation?  Yes  No

Does this create a conflict with the vertical alignment of the crossing roadway?  Yes  No

Comments: \_\_\_\_\_

Distance to nearest intersection or traffic signal: 26'

Comments: \_\_\_\_\_

Does a parallel roadway, within 100 feet of the railroad tracks when it crosses an intersecting road that also crosses the track, have the appropriate advanced warning signs?  Yes  No

Comments: \_\_\_\_\_

Is highway speed appropriate for alignment?  Yes  No

Comments: \_\_\_\_\_

Does vertical alignment create a "hump" or low clearance issues?  Yes  No

Comments: \_\_\_\_\_

Current grade crossing warning device(s)? Required grade crossing devices for New Q2?

Current	Req'd for Q2	Device Description	Comments
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Crossbuck	_____
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	STOP or YIELD Sign	_____
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Pavement Markings	_____
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Bell	_____
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Flashing Lights (Post Mount)	_____
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Flashing Lights (Cantilever)	_____
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Automatic Gates	_____
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Pavement Markings	_____
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Four Quadrant Gates	Possible SSM
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Median Barrier	w/ three (3) gates (Possible SSM)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wayside Horn	_____
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Other:	_____

Comments: **Min Req'd: Gates, Flashing Lights, Constant Warning, Power Out Indication**

Patrick Engineering, Inc. | 450 Vale Park Road, Suite F | Valparaiso, IN 46385 | T:219-413-7103 | F:219-413-7101 | www.patrickco.com





# Diagnostic Review

COMMON GOOD • UNCOMMONLY GREAT

## Diagnostic Team Review

Train detection device at each crossing? Required train detection device(s) for New QZ?  
 Yes  No

Instant Warning  
 \_\_\_\_\_

Tracks adjacent that could obscure sight lines?  
 Yes  No

Obstructing Building???

Frequently violating warning devices at an excessive rate?  
 Yes  No

Indicate any potential problems within the corridor?  
 Yes  No

Do transit buses use crossings within proposed QZ? Can they be rerouted to a single crossing?  
 Yes  No

Do pedestrians utilize crossing? Often  
 Located adjacent to school. Additionally, crossing part of trail network.

Signage/pavement markings at crossing? Required improvements for New QZ?  
 Yes No  
  Required Improvements for QZ  
 Ped. Maze; Additional Signage  
 \_\_\_\_\_

Do you sound horn at pedestrian crossings?  
 Yes  No

Where train horn sounds would provide some warning if train horns were not sounded?  
 Yes  No



## Diagnostic Team Review

**PATRICK ENGINEERING**

What are the approach sight distances? \_\_\_\_\_  
 Comments: \_\_\_\_\_

What is the clearance sight distance for all approaches? \_\_\_\_\_  
 Comments: \_\_\_\_\_

Norfolk Southern Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

FRA Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Other Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Photo Log: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

The diagram shows a street crossing with a 'STREET' label. It includes a '100' CLEARANCE' zone, 'CROSSING SIGHT TRIANGLE', and 'PEDESTRIAN MAZE'. Other labels include 'SPEED', 'STOP', and 'TRAIL'.



# Track Reduction Methods (SSM)

COMMON GOOD • UNCOMMONLY GREAT



## Crossing Closure (Temporary or Permanent)

- Effectiveness: 1.0

# Level Crossing Reduction Methods (SSM)

COMMON GOOD • UNCOMMONLY GREAT



Photo Courtesy of Quiet Zone Technologies

## Four Quadrant Gates

- Effectiveness: 0.77\* - 0.82

Where detection is present, motorists may learn to delay the lowering of gates.



# Reduction Methods (SSM)

ON GOOD • UNCOMMONLY GREAT



Photo Courtesy of Quiet Zone Technologies

## One Way Street with Gates

- Effectiveness: 0.82

# Reduction Methods (SSM)

ON GOOD • UNCOMMONLY GREAT



Photo Courtesy of Quiet Zone Technologies

ates with Raised Medians

- Effectiveness: 0.80

# Reduction Methods (SSM)

ON GOOD • UNCOMMONLY GREAT



Photo Courtesy of Quiet Zone Technologies

ates with Channelization

- Effectiveness: 0.75

# Noise Reduction Methods (ASM)

COMMON GOOD • UNCOMMONLY GREAT



Photo Courtesy of Quiet Zone Technologies

Modified SSMs  
Non-Engineered ASMs  
Engineered ASMs



# Calculator/Scenarios

ON GOOD • UNCOMMONLY GREAT

Federal Railroad Administration

## QUIET ZONE CALCULATOR

Cancel
Change Scenario: Goshen - M\_40327
Continue

**Create New Zone**

**Manage Existing Zones**

**Log Off**

Step by Step Instructions:

**Step 1:** To specify New Warning Device (For Pre-Rule Quiet Zone Only) and/or SSM, click the [MODIFY](#) Button

**Step 2:** Select proposed warning device or SSM. Then click the [UPDATE](#) button. To generate a spreadsheet of the values on this page, click on [ASM](#) button—This spreadsheet can then be used for ASM calculations.

**Step 3:** Repeat Step (2) until the SELECT button is shown at the bottom right side of this page. Note that the SELECT button is shown ONLY when the Quiet Zone Risk Index falls below the NSRT or the Risk Index with Horn.

**Step 4:** To save the scenario and continue, click the SELECT button

Crossing	Street	Traffic	Warning Device	Pre-SSM	SSM	Risk	
510035J	9TH STREET	11496	Gates	0	3	0	Grade Separated
510037X	WASHINGTON ST	0	CLOSED(SSM 2)	0	2	0	Closed
510038E	E JEFFERSON ST	0	CLOSED(SSM 2)	0	2	0	Closed
510039L	E MADISON ST	7200	Gates	0	12	8,729.34	MODIFY
510040F	E PURL ST	1503	Gates	0	11	1,291.99	MODIFY
510041M	E REYNOLDS ST.	888	Gates	0	12	3,469.76	MODIFY
510042U	E DOUGLAS ST	0	CLOSED(SSM 2)	0	2	0	Closed
510043B	E PLYMOUTH AVE	6253	Gates	0	12	8,238.25	MODIFY
510044H	E JACKSON ST	511	Gates	0	12	2,557.76	MODIFY
510045P	E BURDICK ST	131	Gates	0	12	1,545.76	MODIFY
510046W	NEW YORK ST	679	Gates	0	12	2,841.41	MODIFY
510048K	E COLLEGE AVE	9516	Gates	0	12	7,701.79	MODIFY
533510B	KERCHE RD	11103	Gates	0	13	7,106.65	MODIFY
533514D	AIRPORT RD	2098	Gates	0	12	5,873.05	MODIFY
533515K	CR #42	1608	Gates	0	12	5,265.41	MODIFY

Summary

<b>Proposed Quiet Zone:</b>	Goshen - Marion Branch_Scenario_01
<b>Type:</b>	New 24-hour QZ
<b>Scenario:</b>	Goshen - M_40327
<b>Estimated Total Cost:</b>	\$4,467,000.00
<b>Nationwide Significant Risk Threshold:</b>	14347 .00
<b>Risk Index with Horns:</b>	12848.31
<b>Quiet Zone Risk Index:</b>	<b>3641.41</b>

Select

\* Only Public At Grade Crossings are listed.

**ALERT:** Quiet Zone qualifies because SSM has been applied in each crossing.

Click for [Supplementary Safety Measures \[SSM\]](#)

Click for ASM spreadsheet: ASM \* Note: The use of ASMs requires an application to and approval from the FRA.





# Calculator/Scenarios

ON GOOD • UNCOMMONLY GREAT



	BASELINE	OPTION 2	OPTION 5	OPTION 7
Quiet Zone Risk Index	21,430	11,108	12,976	3,641
Risk Index with Horns	12,848	12,848	12,848	12,848
Nationwide Significant Risk Threshold	13,722	13,722	13,722	13,722
Estimated Cost + 20% Contingency	\$4,320,000	\$2,698,800	\$3,580,800	\$3,525,600



# Summary of Local Agency Costs

ON GOOD • UNCOMMONLY GREAT

## Costs

Marion Branch Re-Routing Study		\$29,900
Quiet Zone Diagnostic Review & Permit	\$29,300	
<b>A</b>		
Highway-Rail Crossing Safety Improvements		\$177,400
<b>B</b>		
Marion Branch Curve Realignment		\$325,000
US 33 Grade Separation		\$0
Highway-Rail Crossing Safety Improvements		\$99,000
Highway- Rail Crossing Safety Improvements		\$64,000
Highway- Rail Crossing Safety Improvements		\$100,000
South Link Road Grade Separation		\$1,000,000
Highway- Rail Crossing Safety Improvements		\$35,000
<b>Total City Funds =</b>	<b>\$1,859,600</b>	
<b>Est. Federal Fund =</b>		<b>\$7,260,000</b>
<b>Total Investment =</b>		<b>\$9,119,600</b>



# Development

ON GOOD • UNCOMMONLY GREAT

## Local Agency

- Secure Funding
- Execute Agreement with Railroad(s)
- Update Traffic Counts at Highway-Rail Grade Crossings
- File Notice of Intent
- Install SSMs / ASMs
- Install Advanced Warning Signs
- File Notice of Establishment



# Development

ON GOOD • UNCOMMONLY GREAT

Road(s)

Field Survey

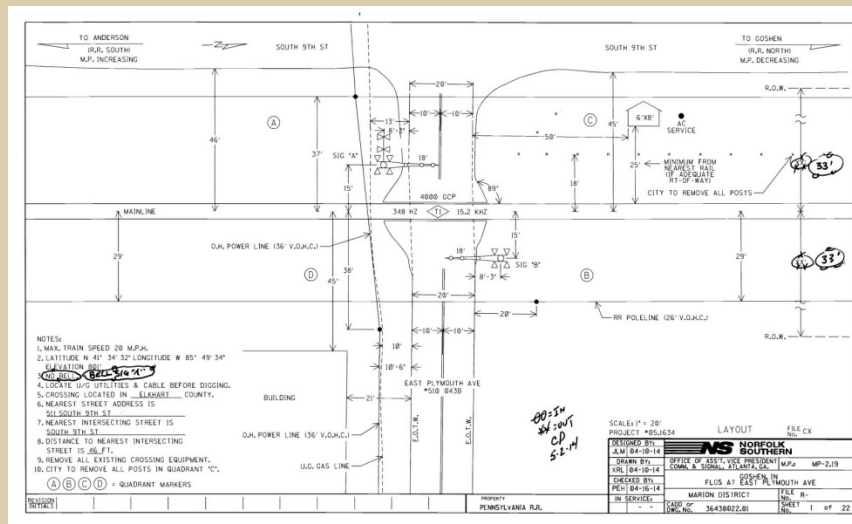
Prepare Force Account

Estimate

Complete Design and

Construction of Trackwork

and Signal Improvements



# Implementation - NOI

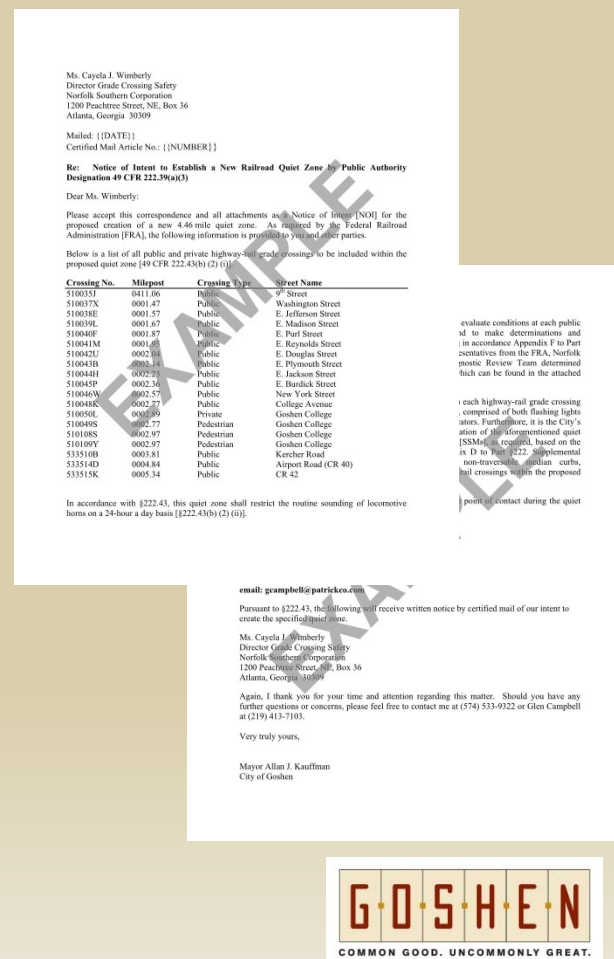
COMMON GOOD • UNCOMMONLY GREAT

Written notice by certified mail, return receipt requested.

Mailed at least 60 days prior to mailing QZ NOE.

Contents:

- List of each public, private, & pedestrian grade crossing.
- Statement of restriction time period
- Proposed implementation improvements
- Point of contact
- Names & addresses of recipients.

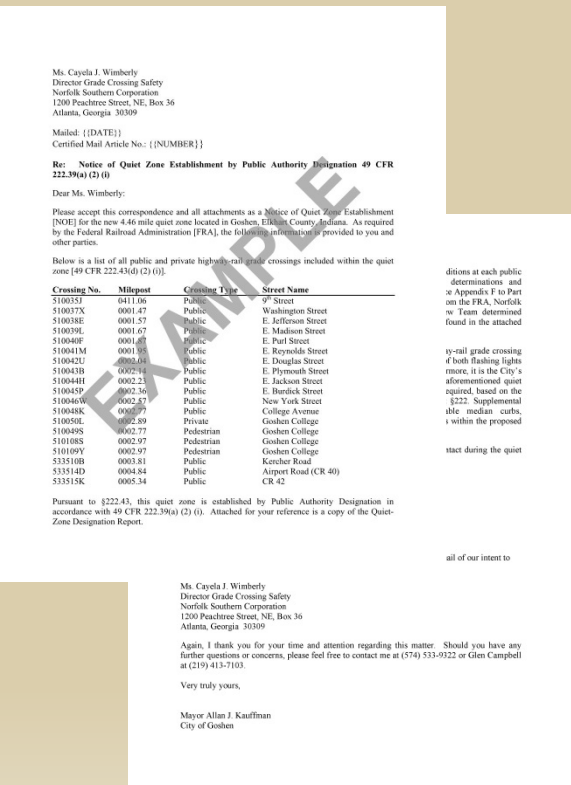


# Implementation - NOE

COMMON GOOD • UNCOMMONLY GREAT

Written notice by certified mail, return receipt requested.  
Mailed at least 60 days after the mailing QZ [NOE].

- Contents:
  - List of each grade crossing.
  - QZ establishment regulatory provision
  - Statement of diagnostic review participation
  - Statement of restriction time period
  - Grade Crossing Inventory Forms (Pre & Post SSMs/ASMs)
  - Notice of Intent Affirmation
  - Point of contact for monitoring compliance
  - Names & addresses of recipients.
  - Chief Executive Officer Statement



# Maintenance

ON GOOD • UNCOMMONLY GREAT

Periodic Updates

SM/ASM Maintenance

Public Education & Awareness  
Campaign

Enforcement



# Lessons Learned

COMMON GOOD • UNCOMMONLY GREAT

Must Say “We want to close a crossing”.

Federal Grant Opportunities

- Surface Transportation Projects (STP)
- Highway Safety Improvement Projects (HSIP)
- Partner with INDOT on State Road Projects

Most Important – Develop Partnerships

Patience.....Lots of Patience!!

