

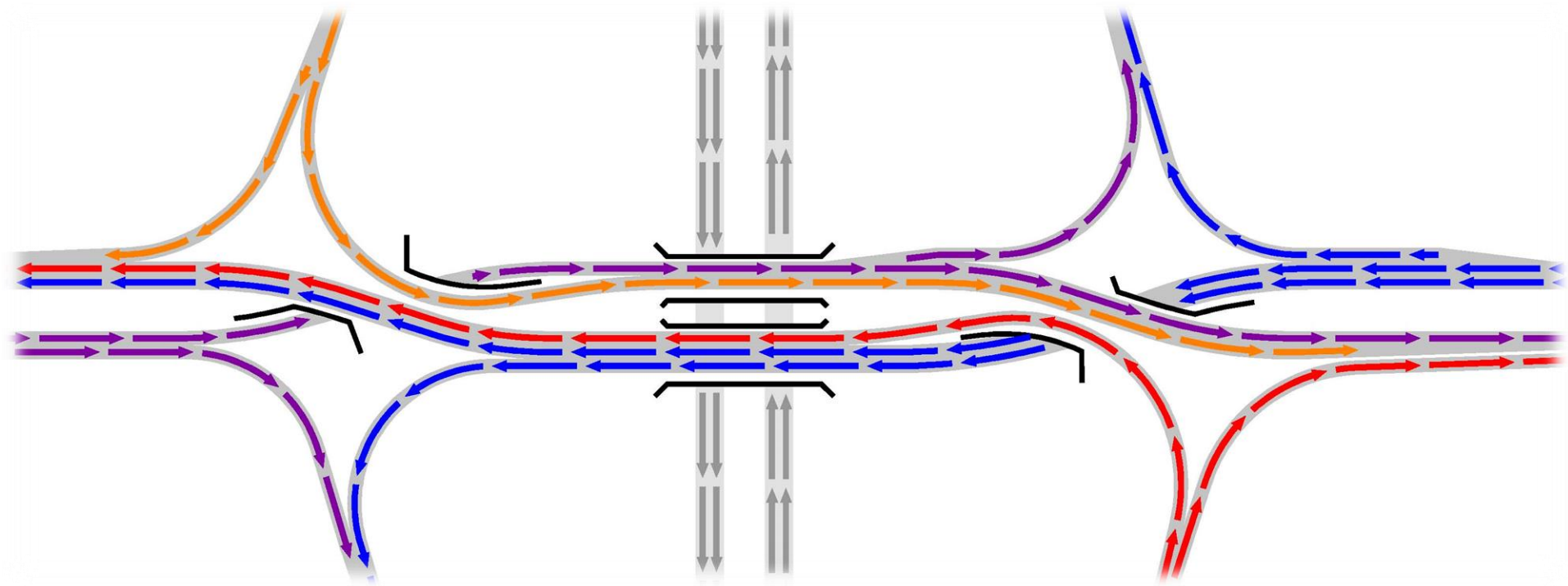
Increasing Capacity & Mobility with a Diverging Diamond Interchange





ODOT District 2 | City of Perrysburg
DGL Consulting Engineers
The EDGE Group | E.S. Wagner





Diverging Diamond Interchange: a type of diamond interchange in which two directions of traffic on the non-freeway road cross to the opposite side on both sides of the bridge at the freeway.

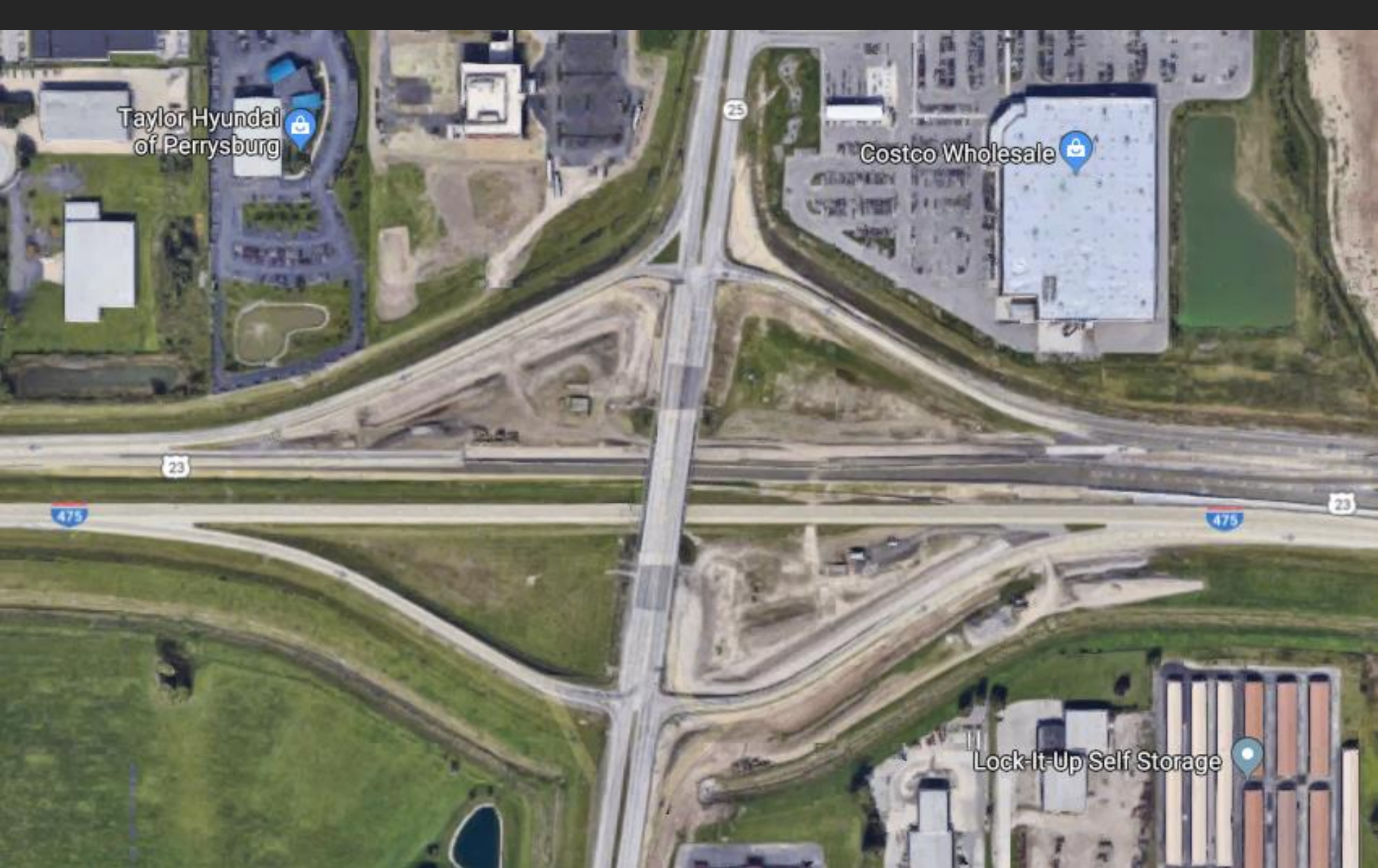




National Diverging Diamond Locations



Diverging Diamond Locations in Ohio



City of Perrysburg | SR 25 and I-475

Issues

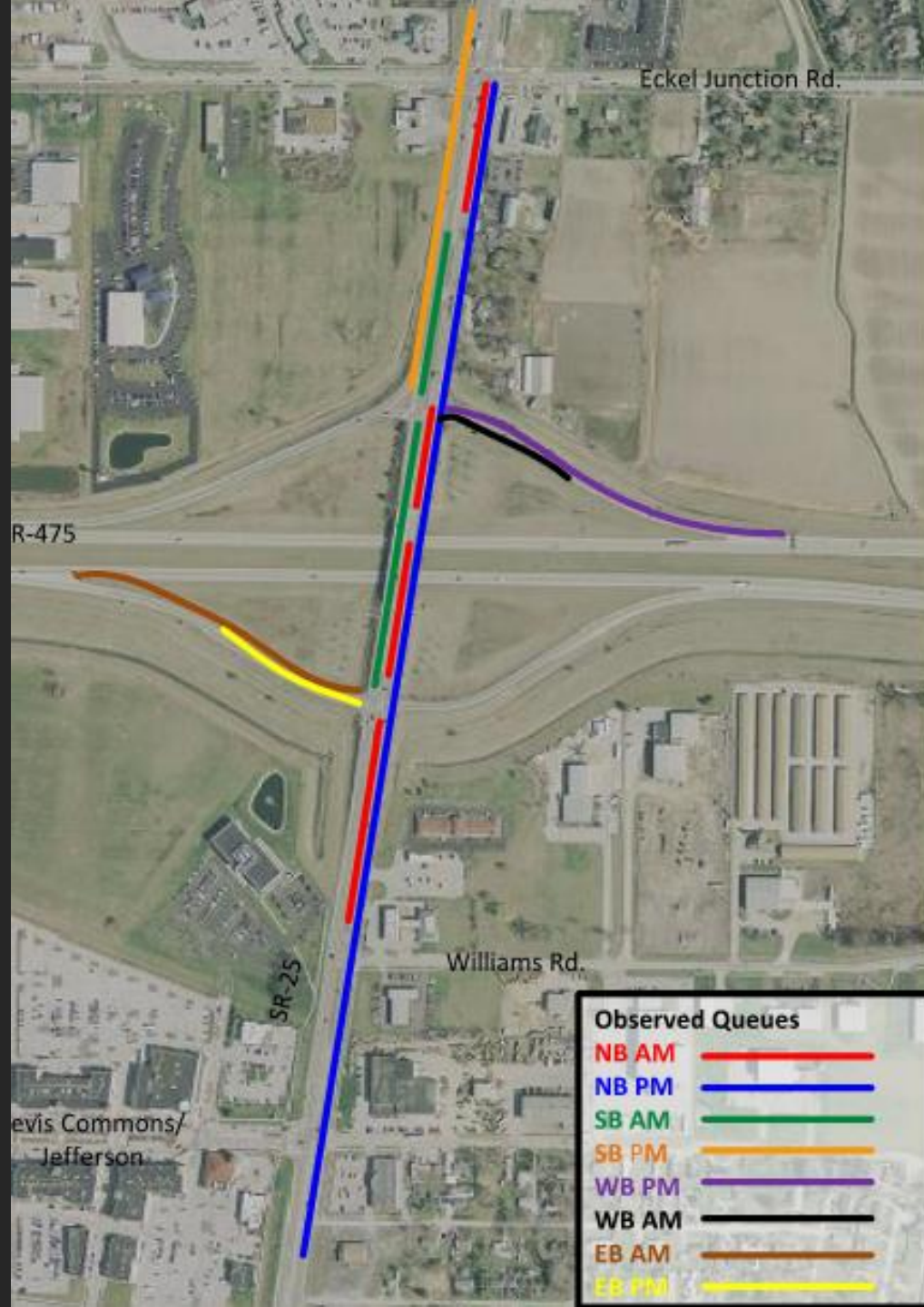
City experienced significant growth

Consistent back-up

Traffic congestion

Lack of pedestrian access

Increased accidents



SR-25 & IR-475 Interchange
Wood Co.



2009: 56
2010: 55
2011: 71
TOTAL: 182

| TYPE_OF_CRASH | Number |
|---------------------|--------|
| Rear End | 17 |
| Sideswipe - Passing | 3 |
| Fixed Object | 1 |
| Angle | 1 |
| Backing | 1 |

| TYPE_OF_CRASH | Number |
|---------------------|--------|
| Rear End | 8 |
| Fixed Object | 5 |
| Backing | 1 |
| Sideswipe - Passing | 1 |

| TYPE_OF_CRASH | Number |
|---------------------|--------|
| Rear End | 14 |
| Fixed Object | 6 |
| Sideswipe - Passing | 2 |
| Parked Vehicle | 1 |

| TYPE_OF_CRASH | Number |
|----------------|--------|
| Rear End | 4 |
| Left Turn | 3 |
| Fixed Object | 2 |
| Parked Vehicle | 1 |

| TYPE_OF_CRASH | Number |
|---------------------|--------|
| Rear End | 12 |
| Left Turn | 11 |
| Angle | 1 |
| Sideswipe - Passing | 1 |

| TYPE_OF_CRASH | Number |
|---------------------|--------|
| Rear End | 20 |
| Fixed Object | 4 |
| Angle | 2 |
| Sideswipe - Passing | 1 |

| TYPE_OF_CRASH | Number |
|---------------------|--------|
| Rear End | 39 |
| Angle | 4 |
| Fixed Object | 4 |
| Sideswipe - Passing | 4 |
| Left Turn | 3 |
| Backing | 1 |
| Parked Vehicle | 1 |



SR 25 and I-475 | Crash Data





Project Needs

Replace existing
Interchange

Utilize existing structure

Successfully maintain
traffic

Accommodate
pedestrians & cyclists

Minimize right of way
acquisitions

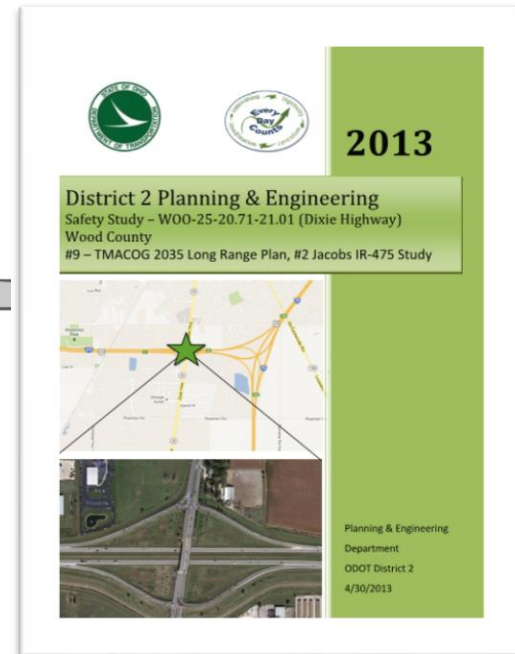
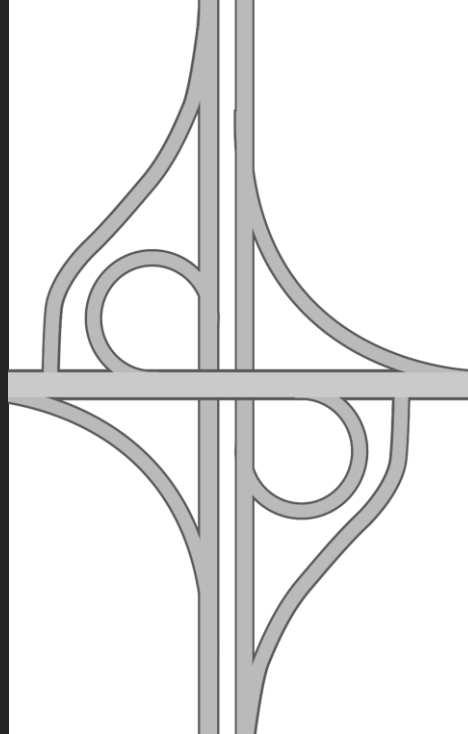
Proposed Alternatives

Traditional Diamond

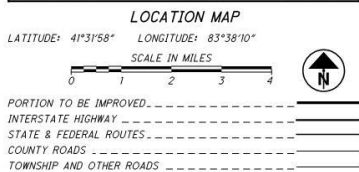
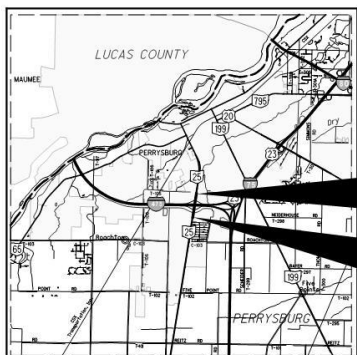
Partial Cloverleaf

Displaced Left Turn

SPUI



STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
WOO-25-20.70
PART 1
CITY OF PERRYSBURG
WOOD COUNTY



DESIGN DESIGNATION SR 25

CURRENT ADT (2015) _____ 30770
DESIGN YEAR ADT (2033) _____ 36525
DESIGN HOURLY VOLUME (2033) _____ 3653
DIRECTIONAL DISTRIBUTION _____ 50%
TRUCKS (24 HOUR B&C) _____ 4%
DESIGN SPEED _____ VARIES (40-30 MPH)
LEGAL SPEED _____ 40 MPH
DESIGN FUNCTIONAL CLASSIFICATION: _____ MINOR ARTERIAL (URBAN)
NHS PROJECT _____ NO

INDEX OF SHEETS

| | | | |
|-------------------------------|-------------------|-----------------------------|---------|
| TITLE SHEET | 1 | CROSS SECTIONS - RAMP B N-E | 163-180 |
| SCHEMATIC PLAN | 2-3 | CROSS SECTIONS - RAMP B S-E | 181-190 |
| TYPICAL SECTIONS | 4-23 | CROSS SECTIONS - RAMP C | 191-198 |
| GENERAL NOTES | 24-26 | CROSS SECTIONS - RAMP C W-S | 199-205 |
| MAINTENANCE OF TRAFFIC | 27-69, 69A, 70-75 | CROSS SECTIONS - RAMP C W-N | 206-212 |
| GENERAL SUMMARY | 76-79 | CROSS SECTIONS - RAMP D S-W | 213-231 |
| SUB SUMMARY | 80-84 | CROSS SECTIONS - RAMP D N-W | 232-241 |
| PROJECT SITE PLAN | 85-86 | GRADING DETAILS | 242-249 |
| PLAN AND PROFILE - SR 25 | 87-96 | JOINT DETAILS | 250-271 |
| PLAN AND PROFILE - RAMP A E-S | 97-99 | CONCRETE MEDIAN DETAIL | 272-273 |
| PLAN AND PROFILE - RAMP A E-N | 100 | CULVERT DETAIL | 274 |
| PLAN AND PROFILE - RAMP B N-E | 101-102 | UNDERDRAIN DETAIL | 275 |
| PLAN AND PROFILE - RAMP B S-E | 103-104 | RETAINING WALL | 276-278 |
| PLAN AND PROFILE - RAMP C | 105 | BIKE RAIL DETAIL | 279 |
| PLAN AND PROFILE - RAMP C W-S | 106 | TRAFFIC CONTROL | 280-310 |
| PLAN AND PROFILE - RAMP C W-N | 107-108 | LIGHTING | 311-317 |
| PLAN AND PROFILE - RAMP D S-W | 109-111 | STRUCTURE (OVER 20' SPAN) | |
| PLAN AND PROFILE - RAMP D N-W | 112 | WOO-25-20.70 | 318-319 |
| CROSS SECTIONS - SR 25 | 113-139 | RIGHT OF WAY | 320-345 |
| CROSS SECTIONS - RAMP A E-S | 140-155 | | |
| CROSS SECTIONS - RAMP A E-N | 156-162 | | |

DESIGN EXCEPTIONS

HORIZONTAL ALIGNMENT (RAMPS A E-N, B S-E, C W-S & D N-W) _____
SUPERELEVATION RATES (RAMPS A E-N, B S-E, C W-S & D N-W) _____

APPROVAL DATES 6/16/2015
6/16/2015

SHEET NUMBERS 2-3
237-244

UNDERGROUND UTILITIES
CONTACT BOTH SERVICES TWO WORKING DAYS BEFORE YOU DIG.

OHIO Utilities Protection SERVICE
Call Before You Dig
1-800-362-2764
(Non-members must be called directly)

OIL & GAS PRODUCERS UNDERGROUND PROTECTION SERVICE
1-800-925-0988

PLAN PREPARED BY:
DGL CONSULTING ENGINEERS
3465 BRIARFIELD BLVD - STE E
MAUMEE, OH 43537
419-535-1015



SIGNED: _____
DATE: 4/29/2016

| STANDARD CONSTRUCTION DRAWINGS | | | | | | | | | | SUPPLEMENTAL SPECIFICATIONS | |
|--------------------------------|---------|----------|---------|---------|---------|-----------|---------|----------|----------|-----------------------------|---------|
| BP-2.1 | 7/17/15 | HL-10.11 | 1/15/16 | MGS-1.1 | 7/19/13 | MT-95.41 | 7/18/14 | TC-7.65 | 1/15/16 | 800 | 4/15/16 |
| BP-2.2 | 7/18/08 | HL-10.12 | 1/15/16 | MGS-2.1 | 7/19/13 | MT-98.29 | 7/19/13 | TC-21.10 | 1/15/16 | 832 | 1/17/14 |
| BP-3.1 | 7/18/14 | HL-10.13 | 1/15/16 | MGS-3.1 | 7/18/14 | MT-100.00 | 1/15/16 | TC-22.20 | 1/17/14 | 840 | 7/17/14 |
| BP-5.1 | 7/19/13 | HL-20.11 | 1/16/16 | MGS-3.2 | 1/18/13 | MT-101.70 | 1/17/14 | TC-41.30 | 10/18/13 | 875 | 1/17/14 |
| BP-6.1 | 7/19/13 | HL-20.14 | 1/16/16 | MGS-4.2 | 7/19/13 | MT-101.90 | 7/17/15 | TC-41.50 | 10/18/13 | | |
| BP-7.1 | 7/18/14 | HL-30.11 | 1/16/16 | | | MT-102.10 | 7/18/14 | TC-42.10 | 10/18/13 | | |
| | | HL-30.21 | 1/17/14 | MH-1.2 | 1/15/16 | MT-102.20 | 7/18/14 | TC-42.20 | 10/18/13 | | |
| CB-2.2 | 1/15/16 | HL-30.22 | 1/17/14 | | | MT-105.10 | 7/19/13 | TC-51.11 | 1/15/16 | | |
| CB-2.3 | 1/15/16 | HL-30.33 | 1/17/14 | RM-3.1 | 7/19/13 | | | TC-65.10 | 1/17/14 | | |
| DM-1.1 | 1/15/16 | HL-30.41 | 7/18/14 | RM-4.5 | 7/18/14 | PCB-91 | 1/18/13 | TC-65.11 | 7/18/14 | | |
| DM-1.2 | 1/18/13 | HL-40.20 | 1/16/16 | RM-5.2 | 1/17/14 | | | TC-71.10 | 1/17/14 | | |
| DM-4.3 | 1/15/16 | HL-60.11 | 1/16/16 | | | VFP-1-90 | 7/17/15 | TC-72.20 | 7/18/14 | | |
| DM-4.4 | 1/15/16 | HL-60.31 | 7/17/15 | | | SBR-1-13 | 1/17/14 | TC-81.21 | 1/15/16 | | |
| F-2.1 | 7/19/13 | | | | | | | TC-83.20 | 1/15/16 | | |
| F-3.3 | 7/19/13 | HW-2.2 | 1/16/16 | | | | | TC-85.20 | 1/15/16 | | |
| F-3.4 | 7/19/13 | | | | | | | | | | |

APPROVED _____
DATE _____ DISTRICT DEPUTY DIRECTOR

APPROVED _____
DATE _____ DIRECTOR, DEPARTMENT OF TRANSPORTATION

PROJECT DESCRIPTION

IMPROVEMENT OF 0.44 MILES OF STATE ROUTE 25 BY WIDENING ROADWAY TO CONSTRUCT A DIVERGING DIAMOND INTERCHANGE. WORK ALSO INCLUDES LIGHTING AND AND TRAFFIC CONTROL (PAVEMENT MARKING, SIGNING AND SIGNALS).

PROJECT EARTH DISTURBED AREA = 18.9 ACRES
ESTIMATED CONTRACTOR EARTH DISTURBED AREA = 3.25 ACRES
NOTICE OF INTENT EARTH DISTURBED AREA = 22.15 ACRES

LIMITED ACCESS

THIS IMPROVEMENT IS ESPECIALLY DESIGNED FOR THROUGH TRAFFIC AND HAS BEEN DECLARED A LIMITED ACCESS HIGHWAY OR FREEWAY BY ACTION OF THE DIRECTOR IN ACCORDANCE WITH THE PROVISIONS OF SECTION 5511.02 OF THE OHIO REVISED CODE.

2013 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING CHANGES AND SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT.

I HEREBY APPROVED THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL NOT REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY EXCEPT AS NOTED ON SHEET 26, AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.

FEDERAL PROJECT NO.
E150 (118)

PID NO.
96249

CONSTRUCTION PROJECT NO.
NONE

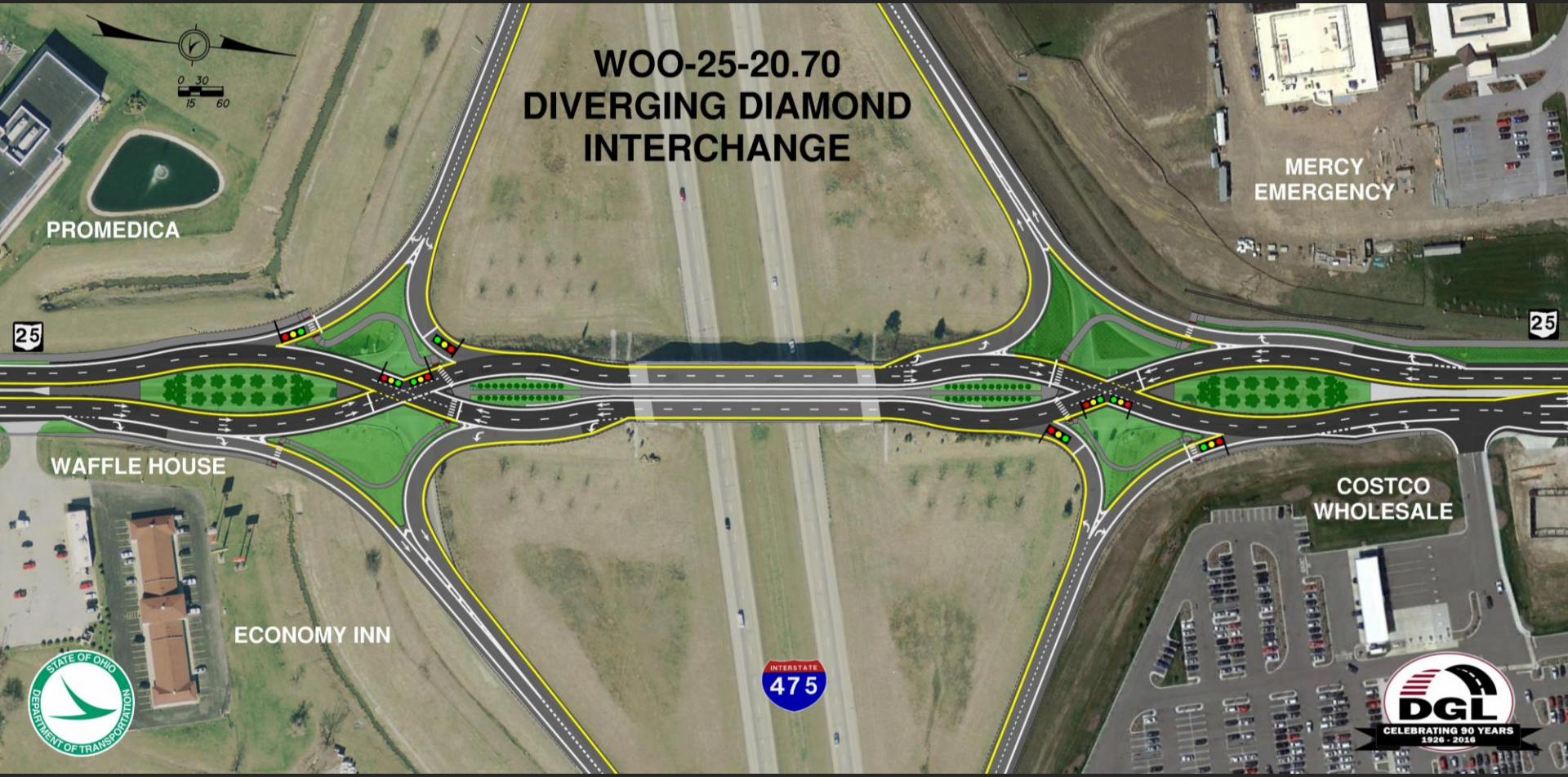
RAILROAD INVOLVEMENT
NONE

WOO-25-20.70

1
345

SR 25 and I-475





WOO-25-20.70 DIVERGING DIAMOND INTERCHANGE

PROMEDICA

MERCY
EMERGENCY

WAFFLE HOUSE

COSTCO
WHOLESALE

ECONOMY INN



\$7.9 Million Construction Value



Benefits

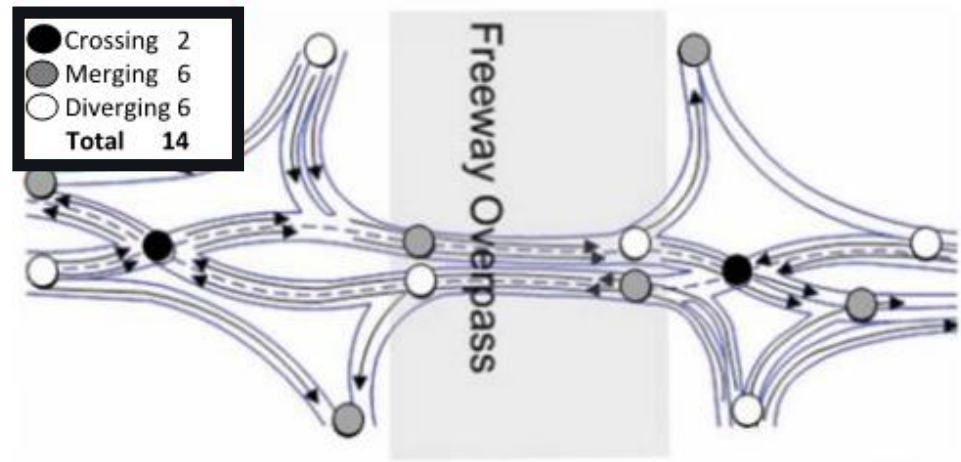
Operations:

Reduces queuing
on highway

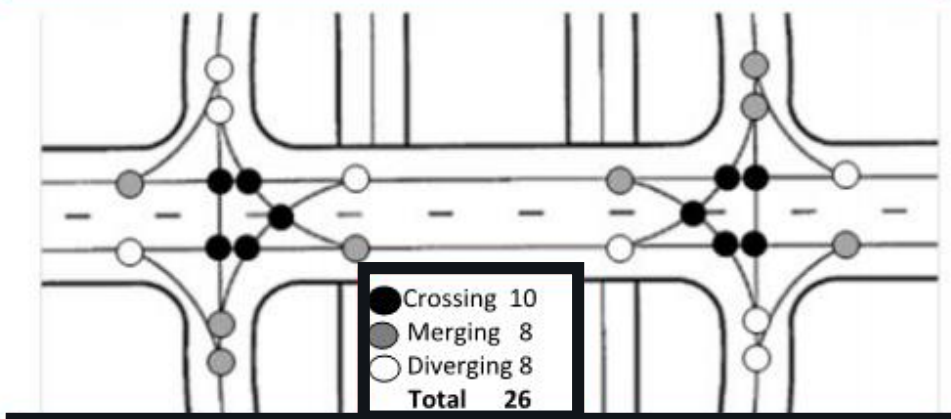
Improves efficiency &
capacity with
two-phase signals

Eliminates left turn
phases to get traffic to I-
475





Diverging Diamond Interchange – Conflict Points



Conventional Diamond Interchange – Conflict Points

Benefits

Safety:

Fewer conflict points

19-46% crash reductions

60 crashes/year

BEFORE

36 crashes/year

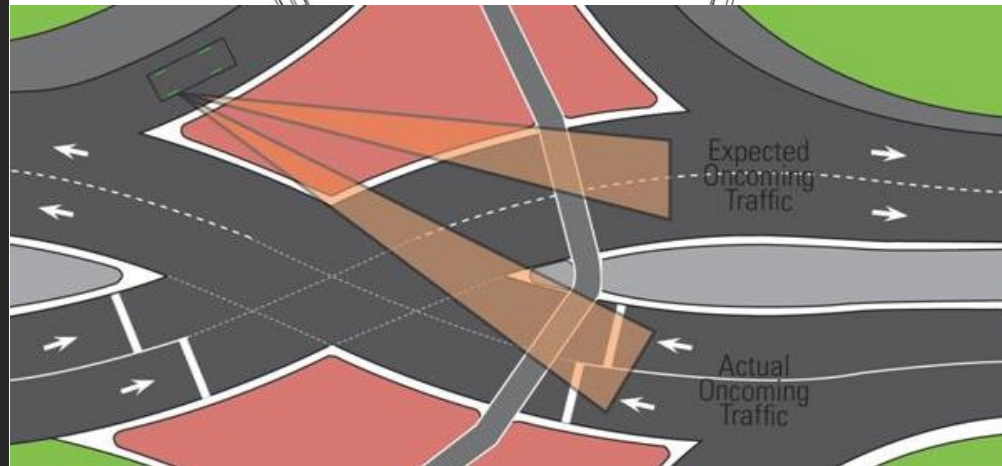
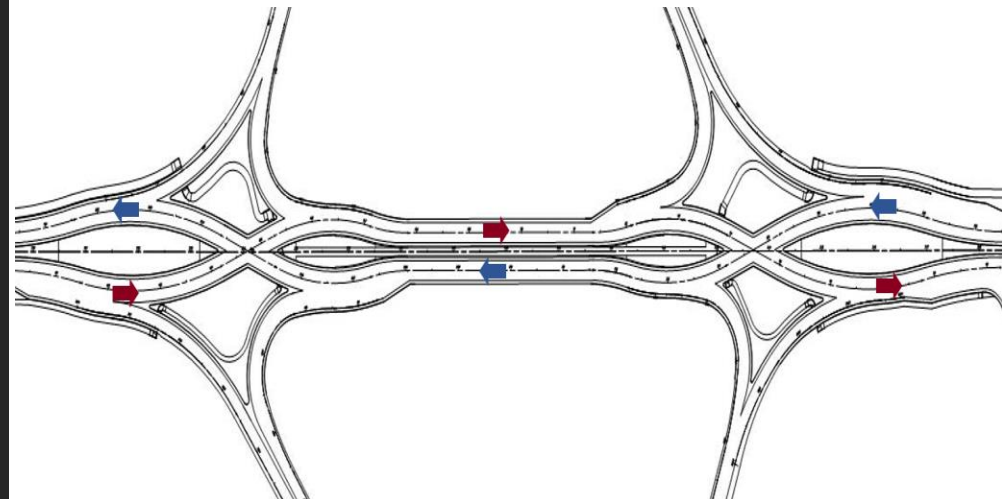
AFTER

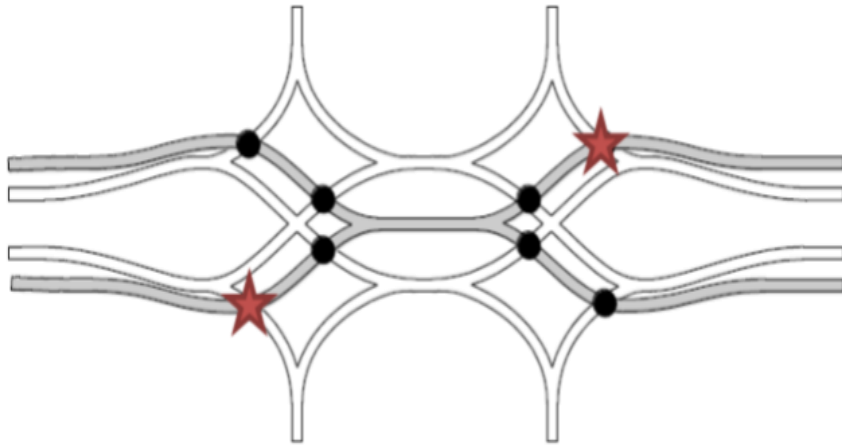
Benefits

Safety:

Better sight distance at turns

Wrong way entry to ramps extremely difficult





Benefits

Safety:

Pedestrian and Bicyclist
Access

10' multi-use path

6' walk

Signalized exit ramps



Benefits

Smaller footprint

Utilized existing bridge

Shorter construction
timeframe



Diverging Diamond Interchange Update

Effective Friday, September 8 at 9pm, through Monday, September 11 at 6am, SR 25 over I-475, will be closed for DDI work. All ramps will remain open.

Northbound Detour: southbound I-475; northbound I-75; US 20 (Exit 193); southbound I-75; northbound I-475; SR 25 (Exit 2).

Southbound Detour: northbound I-475; US 24 (Exit 4B); southbound I-475; SR 25 (Exit 2).



Public Outreach

Multiple public meetings throughout design process

Educational videos on ODOT's website

Public meeting held before opening to traffic



Maintenance of Traffic

Construction began
August 2017

Maintained 2 way traffic

Exit ramps closed

Open to traffic October
2017





Results

DGL and ODOT still monitoring progress

Early data shows crash reduction

Public opinion extremely positive

