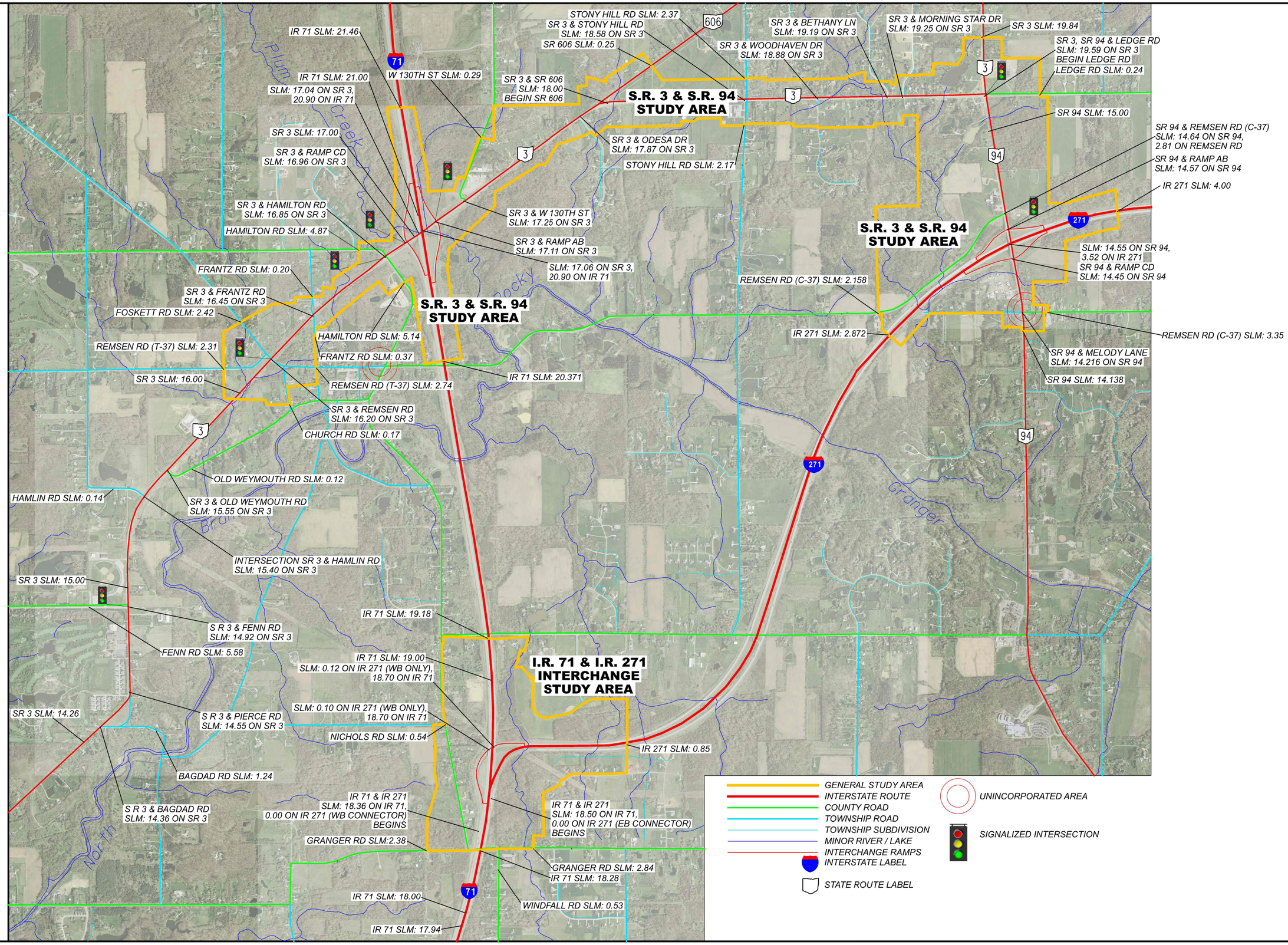
Appendix D

- *Refined Study Area*
- *Purpose and Need Statement*

Refined Study Area


IR 71 SLM: 21.46
IR 71 SLM: 21.00
SLM: 17.04 ON SR 3, 20.90 ON IR 71
SR 3 SLM: 17.00
SR 3 & RAMP CD SLM: 16.96 ON SR 3
SR 3 & HAMILTON RD SLM: 16.85 ON SR 3
HAMILTON RD SLM: 4.87
FRANTZ RD SLM: 0.20
SR 3 & FRANTZ RD SLM: 16.45 ON SR 3
FOSKETT RD SLM: 2.42
REMSEN RD (T-37) SLM: 2.31
SR 3 SLM: 16.00
HAMLIN RD SLM: 0.14
SR 3 SLM: 15.00
SR 3 SLM: 14.26
W 130TH ST SLM: 0.29
STONY HILL RD SLM: 2.37
SR 3 & STONY HILL RD SLM: 18.58 ON SR 3
SR 606 SLM: 0.25
SR 3 & SR 606 SLM: 18.00 BEGIN SR 606
SR 3 & ODESA DR SLM: 17.87 ON SR 3
STONY HILL RD SLM: 2.17
SR 3 & W 130TH ST SLM: 17.25 ON SR 3
SR 3 & RAMP AB SLM: 17.11 ON SR 3
SLM: 17.06 ON SR 3, 20.90 ON IR 71
HAMILTON RD SLM: 5.14
FRANTZ RD SLM: 0.37
REMSEN RD (T-37) SLM: 2.74
SR 3 & REMSEN RD SLM: 16.20 ON SR 3
CHURCH RD SLM: 0.17
OLD WEYMOUTH RD SLM: 0.12
SR 3 & OLD WEYMOUTH RD SLM: 15.55 ON SR 3
INTERSECTION SR 3 & HAMLIN RD SLM: 15.40 ON SR 3
S R 3 & FENN RD SLM: 14.92 ON SR 3
FENN RD SLM: 5.58
S R 3 & PIERCE RD SLM: 14.55 ON SR 3
BAGDAD RD SLM: 1.24
S R 3 & BAGDAD RD SLM: 14.36 ON SR 3
IR 71 SLM: 20.371
IR 71 SLM: 19.18
IR 71 SLM: 19.00
SLM: 0.12 ON IR 271 (WB ONLY), 18.70 ON IR 71
SLM: 0.10 ON IR 271 (WB ONLY), 18.70 ON IR 71
NICHOLS RD SLM: 0.54
IR 71 & IR 271 SLM: 18.36 ON IR 71, 0.00 ON IR 271 (WB CONNECTOR) BEGINS
GRANGER RD SLM:2.38
IR 71 SLM: 18.00
IR 71 SLM: 17.94
IR 71 & IR 271 SLM: 18.50 ON IR 71, 0.00 ON IR 271 (EB CONNECTOR) BEGINS
GRANGER RD SLM: 2.84
IR 71 SLM: 18.28
WINDFALL RD SLM: 0.53
SR 3 & BETHANY LN SLM: 19.19 ON SR 3
SR 3 & WOODHAVEN DR SLM: 18.88 ON SR 3
SR 3 & MORNING STAR DR SLM: 19.25 ON SR 3
SR 3 SLM: 19.84
SR 3, SR 94 & LEDGE RD SLM: 19.59 ON SR 3
BEGIN LEDGE RD
LEDGE RD SLM: 0.24
SR 94 SLM: 15.00
SR 94 & REMSEN RD (C-37) SLM: 14.64 ON SR 94, 2.81 ON REMSEN RD
SR 94 & RAMP AB SLM: 14.57 ON SR 94
IR 271 SLM: 4.00
SLM: 14.55 ON SR 94, 3.52 ON IR 271
SR 94 & RAMP CD SLM: 14.45 ON SR 94
REMSEN RD (C-37) SLM: 2.158
IR 271 SLM: 2.872
REMSEN RD (C-37) SLM: 3.35
SR 94 & MELODY LANE SLM: 14.216 ON SR 94
SR 94 SLM: 14.138
IR 271 SLM: 0.85
S.R. 3 & S.R. 94 STUDY AREA
S.R. 3 & S.R. 94 STUDY AREA
S.R. 3 & S.R. 94 STUDY AREA
I.R. 71 & I.R. 271 INTERCHANGE STUDY AREA
Plum Creek
Rocky
Granger
Brandywine
North
GENERAL STUDY AREA
INTERSTATE ROUTE
COUNTY ROAD
TOWNSHIP ROAD
TOWNSHIP SUBDIVISION
MINOR RIVER / LAKE
INTERCHANGE RAMPS
INTERSTATE LABEL
STATE ROUTE LABEL
UNINCORPORATED AREA
SIGNALIZED INTERSECTION
HORIZONTAL SCALE IN FEET
0
500'
1000'
2000'
REFINED STUDY AREA
DESIGN AGENCY
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DESIGN · ENGINEERING · INNOVATION
An Employee Owned Company
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Purpose and Need Statement

OHIO DEPARTMENT OF TRANSPORTATION

PURPOSE & NEED STATEMENT

Project History

Over the last couple decades, there have been occasional inquiries from members of the public about the absence of connections from Interstate (I) 271 southbound to I-71 northbound and I-71 southbound to I-271 northbound. Today, the most direct route to make those connections is via State Route (SR) 3 (Ledge Road) and SR-94 (Ridge Road). These inquiries in conjunction with congestion along SR-3 and SR-94 have led the Ohio Department of Transportation (ODOT) to acquire federal and state funding to prepare a feasibility study on the movement of traffic from I-271 southbound to I-71 northbound and I-71 southbound to I-271 northbound.

There have been other recent studies and improvements in the vicinity of the I-71 and I-271 interchange which have been generally supported by the public, including:

- A safety, operational, and signal timing study along SR-3 at and around the interchange with I-71 completed in 2020. (PID 107166)
- Safety improvements involving lane modifications, turn lane extensions, and signal improvements on SR-3 near the interchange with I-71 completed in 2022. (PID 109232)

Purpose Statement

The purpose of this project is to improve system linkage between I-71 and I-271 in order to facilitate the movement of traffic in Medina County, Ohio.

Need Elements

System Linkage

The Primary Need is to address the linkage issues in the interstate network. Currently, there are two missing ramp connections at the 1-71/I-271 interchange – the movement from I-271 southbound to I-71 northbound and the movement from I-71 southbound to I-271 northbound. The shortest existing route for motorists traveling from I-71 southbound to I-271 northbound (and vice vera) is approximately 3.7 miles along SR-3 (Ledge Road) and SR-94 (Ridge Road), which takes approximately 10 minutes to travel. Review of origin and destination data in the area from 2019 (pre-pandemic) showed that four percent of all traffic entering the I-71 northbound on-ramp at SR-3 originates from the I-271 southbound off-ramp at SR-94, and seven percent of all traffic entering the I-271 northbound on-ramp at SR-94 originates from the I-71 southbound off-ramp at SR -3.

Congestion

The Secondary Need is to address areas with congestion within the study area. Most of the intersections within the study area operate at intersection Level of Service (LOS) C or better during both the AM and PM peak periods, based on traffic counts collected in September 2022 (**Table 1**). ODOT's standard for acceptable intersection LOS inside of an MPO is LOS D or better according to the ODOT Analysis and Traffic Simulation Manual (OATS), while intersections with a LOS E or LOS F are considered to have high delay. The only intersection under existing conditions that has a high delay is the intersection of SR-94 and the I-271 northbound ramps, which consistently operates at LOS F in both the AM and PM peak periods. This intersection follows a side-street stop-controlled (SSSC) configuration, with SR-94 as the primary movement and the I-271 off-ramp being stop-controlled. While considered acceptable with an existing LOS D, the following intersections may see an increase in delay and an unacceptable LOS, if traffic volumes increase in the future: SR-94 and SR-3 (AM peak period), SR-94 and the I-271 southbound ramps (PM peak period), and SR-94 and Remsen Road north of I-271 (PM peak period). The intersection of SR-94 with Remsen Road has a

SSSC configuration with Remsen Road being stop-controlled, while the intersections of SR-94 with SR-3 and the I-271 southbound ramps are signalized. All of the existing LOS D and LOS F intersections are within a 0.7-mile stretch of SR-94 located between the I-71/SR-3 interchange and the I-271/SR-94 interchange.

Table 1 - Delay and LOS, Existing Conditions (2022)

ID #	Intersection	Control[1]	AM Peak Period[2]		PM Peak Period[2]	
			Delay (sec.)	LOS	Delay (sec.)	LOS
10	SR-94 (Ridge Rd) & SR-3 (Ledge Rd)	Signal	44.6	D	30.8	C
20	SR-606 (Weymouth Rd) & SR-3	SSSC	10.1	B	12.7	B
30	SR-3 & W 130th St	SSSC	19.6	C	21.1	C
40	SR-3 & I-71 NB Ramps	Signal	20.1	C	12.3	B
50	SR-3 & I-71 SB Ramps	Signal	13.4	B	20.3	C
60	SR-3 & Hamilton Rd/Old Weymouth Rd	Signal	15.7	B	8.1	A
70	SR-3 & Foskett Rd/Remsen Rd	Signal	9.7	A	16.1	B
220	Ridge Rd & Remsen Rd/Melody Lane	SSSC	21.4	C	19.1	C
230	SR-94 (Ridge Rd) & I-271 NB Ramps	SSSC	236.1	F	53.4	F
240	SR-94 (Ridge Rd) & I-271 SB Ramps	Signal	15.4	B	47.6	D
250	Ridge Rd & Remsen Rd (North)	SSSC	26.9	D	20.6	C

Notes:
1. Signal = Signalized; SSSC = Side-street stop-controlled
2. Signalized delay and LOS shown for the intersection overall, and two-way stop-controlled delay and LOS shown for the worst movement.

The OATS manual also includes operational goals for approach LOS, volume to capacity ratios (v/c) for each intersection movement, and queue-storage ratios (QSR) for each intersection movement. Several of the intersections have approach LOS, movement v/c values, or movement QSR values that exceed ODOT operational goals under existing conditions, even when the intersection LOS is within the operational goals.

Logical Termini and Independent Utility

The logical termini for the proposed project were established based on the project purpose, the identified needs, and the origin/destination and traffic data. Due to the incorporation of the local road network to complete the missing ramp movements at the I-71/I-271 interchange, the study area was divided into two locations – the area around the I-71/I-271 interchange and the area that comprises the portion of the local road network that serves the missing ramp movements. As a result, the local termini of the project are also divided into two locations.

For the area around the I-71/I-271 interchange, the logical termini include:

- To the south: I-71, SLM 18.28
- To the north: I-71, SLM 19.18
- To the east: I-271 at SLM 0.85

The area that comprises the portion of the local road network the serves the missing ramp movements at the I-71/I-271 interchange include the segment of SR-3 that connects to I-71 and the segment of SR-94 that connects to I-271. The logical termini include:

- For SR-3: SR-3/Remsen Road intersection (western terminus) to the SR-3/SR-94 intersection (eastern terminus)
- For SR-94: SR-94/Melody Lane intersection (southern terminus) to the SR-3/SR-94 intersection (northern terminus)

Even if no additional transportation improvements in the area are made, the execution of this project within the identified local termini would address the project purpose and identified needs. This project is not dependent on any other projects, and as a stand-along project, it is considered to be a reasonable expenditure of public funds.