LAYOUT HISTORY

PROJECT HISTORY

2021
A corridor study led by the Mankato/North Mankato Area Planning Organization was prepared for TH 169 through Mankato and North Mankato. A locally recommended corridor vision was developed by the Project Management Team (PMT) and modified based on public input. The locally recommended corridor vision for this segment of TH 169 is to remain an at-grade expressway with a short-term traditional signal at the eastbound exit ramp of the Highway 14 interchange, and reconstruction of the North River Lane and Webster Avenue intersections as roundabouts.
After the North River Lane access is established, a closure of Lind Street is recommended because of the proximity to the Highway 14 interchange.
Reconstruction of the Highway 14 interchange is in the long-term vision driven by growth and safety needs.

Layout 1
Layout No. 1 was submitted for District and GDSU review on 4/1/2024.

Layout 1A
Comments were received from the District and GDSU on Layout No. 1 dated 4/1/2024. Design Changes Include:
-Utilitize output gutter between the central island and the truck apron.
-Remove 1:10 tapers used to terminate the C&G on the exits.
-Terminate the C&G on the exits as soon as the ditch is developed.
-Increase the available weave distance at the EB TH 14 off ramp to be similar to the existing condition.
-Modify the EB TH 14 entrance ramp to a similar condition as existing.

Layout 1B
Comments were received from the District and GDSU on Layout No. 1A dated 6/10/2024. Design Changes Include:
-Show both primary and secondary alignments on plan views.
-Reduced the amount of left offset on the TH 169 roundabout approaches.
-Modify the slope of the central island typical to a 1:4 maximum.
-Removal of the signal and geometric changes at the EB TH 14 off ramp.

PROJECT NEEDS:

Primary
A pavement RQI of 2.5 is considered terminal serviceablility. The RQI of the southbound lanes is currently 2.9 indicating the pavement is in a fair condition. By 2027 the RQI is predicted to be 2.8 indicating a fair condition and nearing terminal serviceability. The RQI of the northbound lanes is currently 2.7 indicating the pavement is in a fair condition. By 2027 the RQI is predicted to be 2.1 indicating a fair condition but below terminal serviceability.

The drainage infrastructure along this segment has deteriorated to a point where structures are taking in material that is leading to voids below the pavement surface. The corridor includes pipes with a condition rating of 4 (severe).

Secondary
For the period of 2015-2019, the intersection of TH 169 & Lind Street had an observed total crash rate of 1.45 per million entering vehicles (MEV) while the statewide average for like intersections is 0.45 per MEV, and the critical rate for this intersection is 0.71 per MEV (Critical Index =2.04). The intersection also has an observed fatal & serious injury crash rate of 2.07 per MEV which is higher than the statewide average of 0.48 for like intersections. There were 70 total crashes during this period at this intersection. The Lind Street intersection is projected to function at a level of service C at the peak hours in 2040.

For the period of 2015-2019, the intersection of TH 169 & Webster Avenue had an observed total crash rate of 0.61 per million entering vehicles (MEV) while the statewide average for like intersections is 0.45 per MEV, and the critical rate for this intersection is 0.71 per MEV (Critical Index = 0.86). There were 29 total crashes during this period at this intersection. The Webster Avenue intersection is projected to function at a level of service B in the a.m. peak and level of service C at the p.m. peak hour in 2040.

PURPOSE STATEMENT OF PROJECT:

Primary
Achieve a smooth riding surface by reconstructing the road.

Improve the reliability of the drainage infrastructure along the project.

Secondary
Create safer intersections to access the local roadway network near TH 14 and reduce user delay for mainline traffic.

Improve the reliability of the center median barrier that exists along this project segment by bringing it up to current standards.

Improve the pedestrian infrastructure so it meets ADA standards within the project limits.

Additional Considerations
Address City utilities within the footprint of the roadway with this project.

Create a more inviting entrance into the community to foster development and revitalization along this segment of TH 169.

LAYOUT No. 1B COPY No. ____
T.H. 169 VICINITY OF MANKATO AND NORTH MANKATO
FROM APPROXIMATELY 200' SOUTH OF BELGRADE AVENUE
TO APPROXIMATELY 3,500' NORTH OF TH 14
Prepared NOVEMBER 13 20 24 Scale: Hor. 1 inch = 100 ft.
SRF
By

The alignment and grades shown on this map are tentative and subject to change without notice.

Staff Approval
Date: ______

The traffic volumes shown are estimated for year 2038 & 2048
Sources for the Traffic information shown on this layout can be found in the Layout Notes
Prepared MARCH 20 24

S.P. 5212-42 T.H. 169 A.J. T7D845 PPMS Activity 1140
S.P. ____ T.H. ____ A.J. ____ PPMS Activity ____
S.P. ____ T.H. ____ A.J. ____ PPMS Activity ____
Copy To: ____ For: ____

DESIGN FILE: H:\Projects\16000\16295\TechData\CADDesign\Layout\cd071381_loa.dgn
DATE: 11/13/2024 - DATE PLOTTED

Level 1 LAYOUT APPROVAL

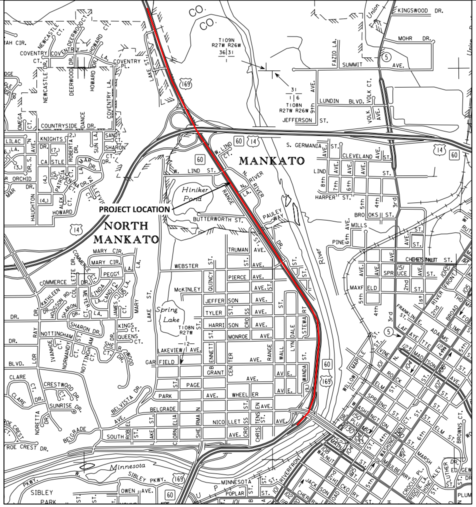
Programmed Letting Date September 23, 2026

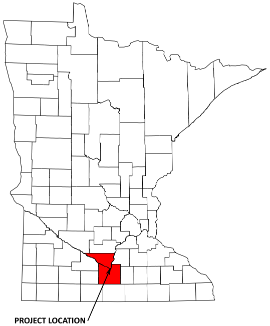
Prepared By	SRF	20 24
Reviewed By	City of Mankato Public Works Director	20 ___
Reviewed By	City of North Mankato Public Works Director	20 ___
Reviewed By	District Design Engineer	20 ___
Reviewed By	District Traffic Engineer	20 ___
Reviewed By	State Geometrics Engineer	20 ___
Approved By	District Engineer	20 ___
Approved By	State Design Engineer	20 ___

I HEREBY CERTIFY THAT THIS LAYOUT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Zach Heimer
Digitally signed by Zach Heimer
Date: 2024.11.13 12:42:37 -06'00'

DATE: 11/13/2024 LIC. NO.: 58755 ENGR.:


PROJECT LOCATION
NORTH MANKATO
MANKATO
Minnesota
Spring Lake
Hiniker Pond
T109N R27W R26W
T108N R27W R26W

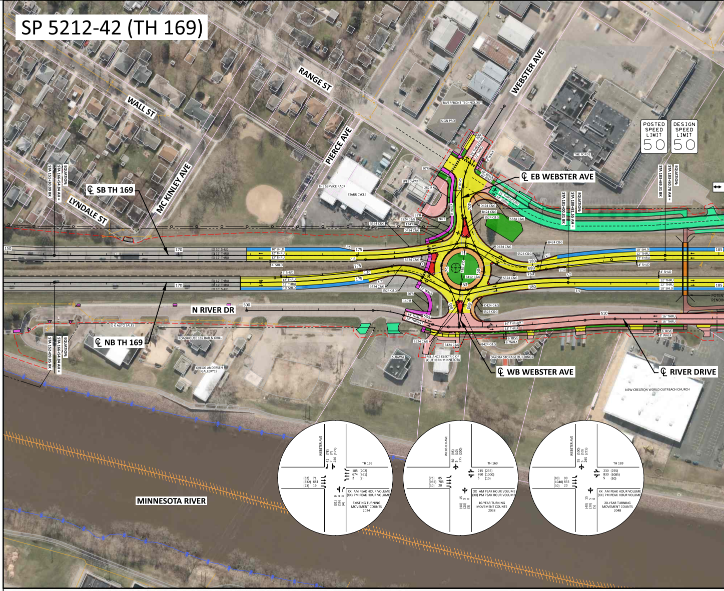

PROJECT LOCATION

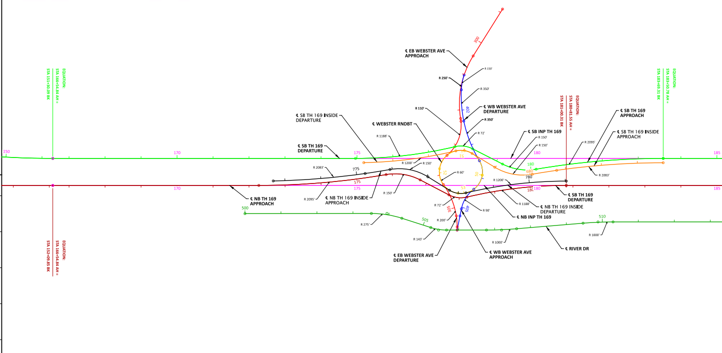
LAYOUT NOTES

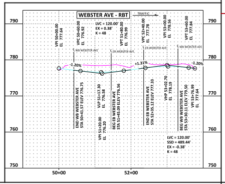
1. TH 169 IS AN APPROVED HOUSE MOVING ROUTE.
2. TH 169 IS AN OSOW/SUPER LOAD CORRIDOR.
3. NO DESIGN EXCEPTIONS ARE NEEDED.
4. PEDESTRIAN ACCOMMODATIONS WILL MEET ADA/PROWAG REQUIREMENTS.
5. EXISTING AADT & HCAADT VOLUMES WERE COLLECTED BY SRF CONSULTING GROUP JANUARY 2024 AND FORECAST METHODOLOGY COORDINATED WITH THE OFFICE OF TRANSPORTATION SYSTEM MANAGEMENT.

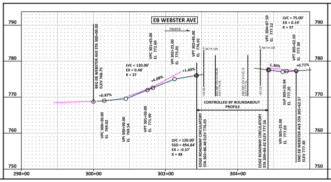
① PROVISION OF, AND POTENTIAL TREATMENTS FOR, AT-GRADE PEDESTRIAN CROSSING SUBJECT TO OUTCOME OF FEASIBILITY ANALYSIS FOR POTENTIAL BOX CULVERT.

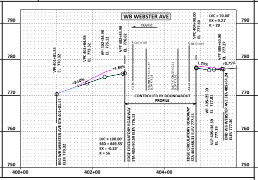
SP 5212-42 (TH 169)

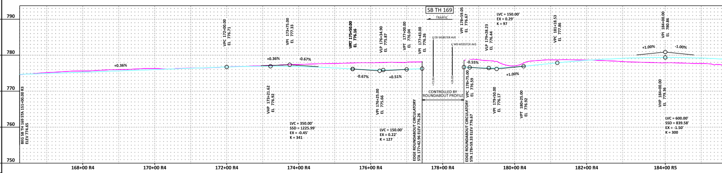

POSTED SPEED LIMIT 50
DESIGN SPEED LIMIT 50
℄ EB WEBSTER AVE
℄ SB TH 169
℄ NB TH 169
℄ WB WEBSTER AVE
℄ RIVER DRIVE
N RIVER DR
RANGE ST
WALL ST
PIERCE AVE
WEBSTER AVE
MC KINLEY AVE
LYNDALE ST
MINNESOTA RIVER
XX AM PEAK HOUR VOLUME
(XX) PM PEAK HOUR VOLUME
EXISTING TURNING MOVEMENT COUNTS 2024
10-YEAR TURNING MOVEMENT COUNTS 2038
20-YEAR TURNING MOVEMENT COUNTS 2048

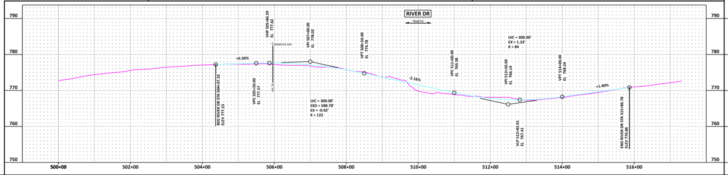

℄ EB WEBSTER AVE APPROACH
℄ WB WEBSTER AVE DEPARTURE
℄ SB TH 169 INSIDE DEPARTURE
℄ WEBSTER RNDBT
℄ SB INP TH 169
℄ SB TH 169 APPROACH
℄ SB TH 169 INSIDE APPROACH
℄ SB TH 169 DEPARTURE
℄ NB TH 169 APPROACH
℄ NB TH 169 INSIDE APPROACH
℄ SB TH 169 DEPARTURE
℄ NB TH 169 INSIDE DEPARTURE
℄ NB INP TH 169
℄ EB WEBSTER AVE DEPARTURE
℄ WB WEBSTER AVE APPROACH
℄ RIVER DR

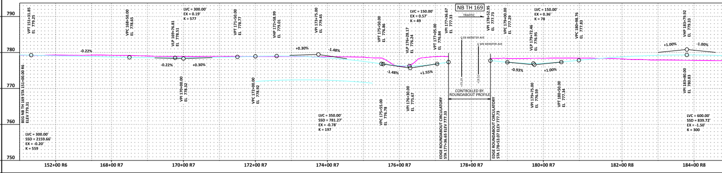


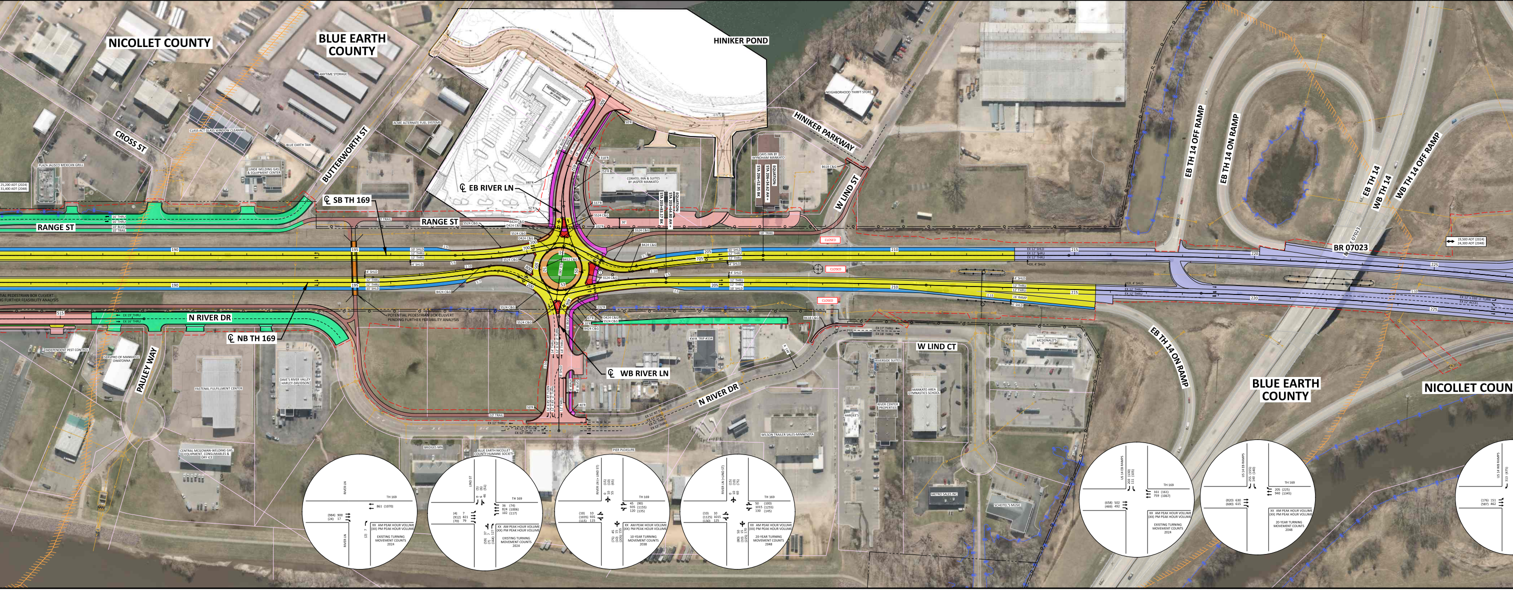


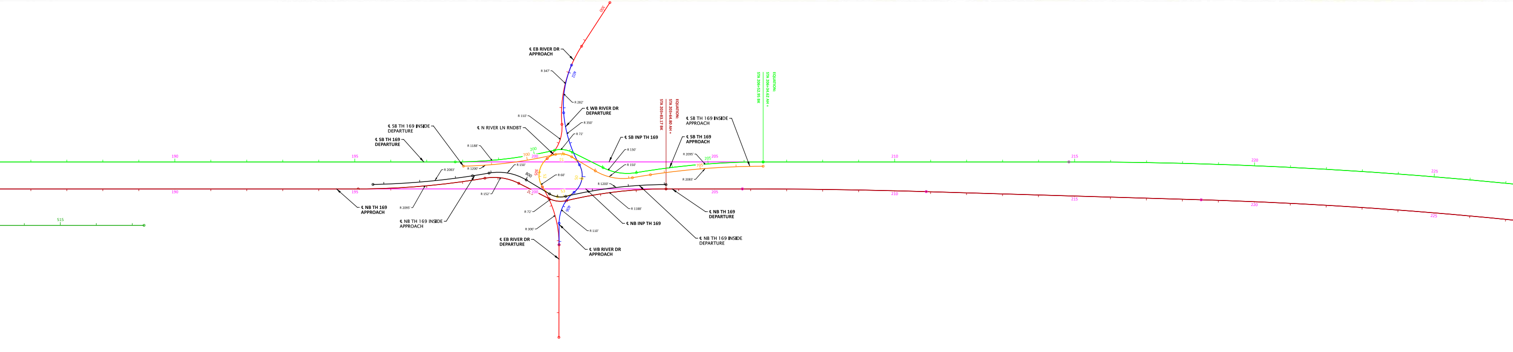


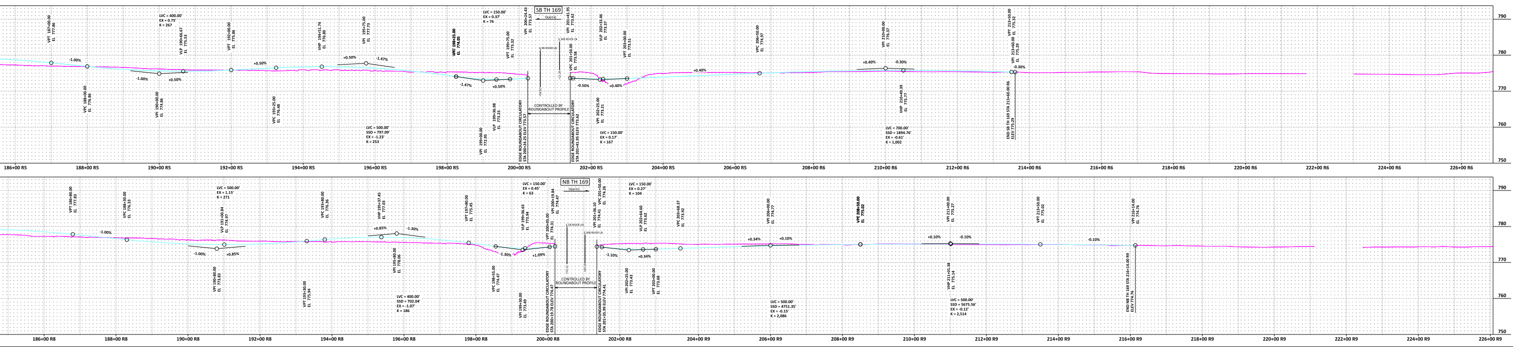


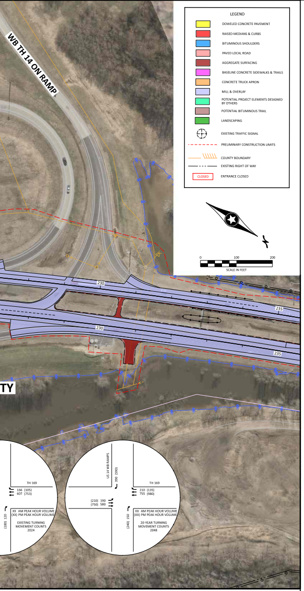





NICOLLET COUNTY
BLUE EARTH COUNTY
HINIKER POND
HINIKER PARKWAY
CROSS ST
BUTTERWORTH ST
℄ SB TH 169
RANGE ST
RANGE ST
℄ EB RIVER LN
W LIND ST
EB TH 14 OFF RAMP
EB TH 14 ON RAMP
EB TH 14
WB TH 14
WB TH 14 OFF RAMP
BR 07023
N RIVER DR
℄ NB TH 169
PAULEY WAY
℄ WB RIVER LN
N RIVER DR
W LIND CT
EB TH 14 ON RAMP
BLUE EARTH COUNTY
NICOLLET COUN
CLOSED
XX AM PEAK HOUR VOLUME
(XX) PM PEAK HOUR VOLUME
EXISTING TURNING MOVEMENT COUNTS 2024
20-YEAR TURNING MOVEMENT COUNTS 2038
20-YEAR TURNING MOVEMENT COUNTS 2048
TH 169
RIVER LN
US 14 EB RAMPS
US 14 WB RAMPS

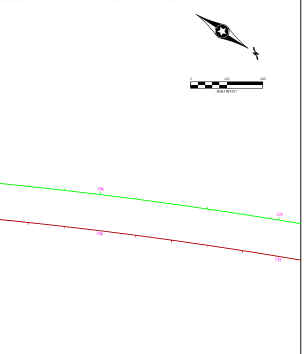

℄ EB RIVER DR APPROACH
℄ WB RIVER DR DEPARTURE
℄ N RIVER LN RNDBT
℄ SB TH 169 INSIDE DEPARTURE
℄ SB TH 169 DEPARTURE
℄ SB INP TH 169
℄ SB TH 169 INSIDE APPROACH
℄ SB TH 169 APPROACH
EQUATION
℄ NB TH 169 APPROACH
℄ NB TH 169 INSIDE APPROACH
℄ NB INP TH 169
℄ NB TH 169 DEPARTURE
℄ NB TH 169 INSIDE DEPARTURE
℄ EB RIVER DR DEPARTURE
℄ WB RIVER DR APPROACH
190
195
200
205
210
215
220
225



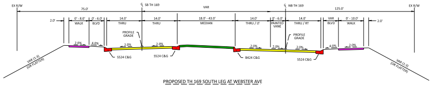

WB TH 14 ON RAMP
230
235
TY
TH 169
146 (105)
607 (753)
XX AM PEAK HOUR VOLUME
(XX) PM PEAK HOUR VOLUME
EXISTING TURNING MOVEMENT COUNTS 2024
US 14 WB RAMPS
TH 169
210 (135)
755 (980)
(210) 150
(750) 580
20 YEAR TURNING MOVEMENT COUNTS 2048
SCALE IN FEET
0
100
200

LEGEND

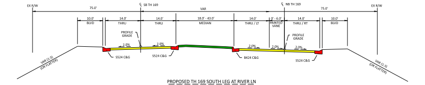
🟨	DOWELED CONCRETE PAVEMENT
🟥	RAISED MEDIANS & CURBS
🟦	BITUMINOUS SHOULDERS
🟥	PAVED LOCAL ROAD
🟫	AGGREGATE SURFACING
🟪	BASELINE CONCRETE SIDEWALKS & TRAILS
🟧	CONCRETE TRUCK APRON
🟦	MILL & OVERLAY
🟩	POTENTIAL PROJECT ELEMENTS DESIGNED BY OTHERS
🟫	POTENTIAL BITUMINOUS TRAIL
🟩	LANDSCAPING
⊕	EXISTING TRAFFIC SIGNAL
- - -	PRELIMINARY CONSTRUCTION LIMITS
▨	COUNTY BOUNDARY
— · · —	EXISTING RIGHT OF WAY
CLOSED	ENTRANCE CLOSED


SCALE IN FEET
0
100
200
230
235

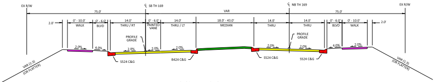
PROPOSED


EX R/W
SB TH 169
NB TH 169
75.0'
VAR
125.0'
0' - 8.0' WALK
0' - 6.0' BLVD
14.0' THRU
14.0' THRU
18.0' - 43.0' MEDIAN
14.0' THRU / LT
0' - 6.0' PAINTED VANE
14.0' THRU / RT
VAR BLVD
0' - 10.0' WALK
PROFILE GRADE
S524 C&G
B424 C&G
VAR (1:3) (OR FLATTER)

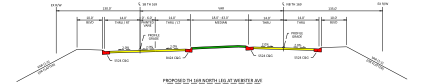
PROPOSED TH 169 SOUTH LEG AT WEBSTER AVE
DESIGN SPEED = 50 MPH
NB TH169 STA 175+26.92 R7 TO STA 176+82.89 R7


EX R/W
SB TH 169
NB TH 169
75.0'
VAR
75.0'
10.0' BLVD
14.0' THRU
14.0' THRU
18.0' - 43.0' MEDIAN
14.0' THRU / LT
0' - 6.0' PAINTED VANE
14.0' THRU / RT
10.0' BLVD
PROFILE GRADE
S524 C&G
B424 C&G
VAR (1:3) (OR FLATTER)

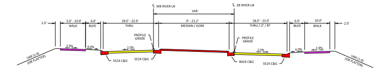
PROPOSED TH 169 SOUTH LEG AT RIVER LN
DESIGN SPEED = 50 MPH
NB TH169 STA 198+07.95 R8 TO STA 199+66.76 R8


EX R/W
SB TH 169
NB TH 169
75.0'
VAR
75.0'
0' - 10.0' WALK
0' - 6.0' BLVD
14.0' THRU / RT
0' - 6.0' PAINTED VANE
14.0' THRU / LT
18.0' - 43.0' MEDIAN
14.0' THRU
14.0' THRU
0' - 6.0' BLVD
0' - 10.0' WALK
PROFILE GRADE
S524 C&G
B424 C&G
VAR (1:3) (OR FLATTER)

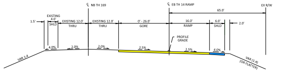
PROPOSED TH 169 NORTH LEG AT RIVER LN
DESIGN SPEED = 50 MPH
NB TH169 STA 201+87.23 R8 TO STA 203+54.31 R8


EX R/W
SB TH 169
NB TH 169
130.0'
VAR
135.0'
10.0' BLVD
14.0' THRU / RT
0' - 6.0' PAINTED VANE
14.0' THRU / LT
18.0' - 43.0' MEDIAN
14.0' THRU
14.0' THRU
10.0' BLVD
PROFILE GRADE
S524 C&G
B424 C&G
VAR (1:3) (OR FLATTER)

PROPOSED TH 169 NORTH LEG AT WEBSTER AVE
DESIGN SPEED = 50 MPH
NB TH169 STA 179+04.23 R7 TO STA 180+70.39 R7

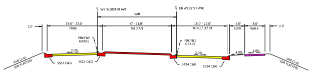

WB RIVER LN
EB RIVER LN
VAR
5.0' - 10.0' WALK
6.0' BLVD
18.0' - 22.0' THRU
0' - 21.2' MEDIAN / GORE
18.0' - 23.0' THRU / LT / RT
6.0' BLVD
10.0' WALK
PROFILE GRADE
S524 C&G
B424 C&G
VAR (1:4) (OR FLATTER)

PROPOSED RIVER LN WEST LEG AT TH 169
DESIGN SPEED = 30 MPH
EB RIVER LN STA 300+36.10 TO STA 303+86.38

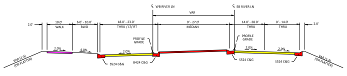

NB TH 169
EB TH 14 RAMP
EX R/W
65.0'
EXISTING 4.0' SHLD
EXISTING 12.0' THRU
EXISTING 12.0' THRU
0' - 26.0' GORE
16.0' RAMP
6.0' SHLD
PROFILE GRADE
VAR 1:4
VAR (1:4) (OR FLATTER)

PROPOSED EB TH 14 ON RAMP
DESIGN SPEED = 30 MPH
EB TH 14 ON RAMP STA 20+00.00 TO STA 23+62.00

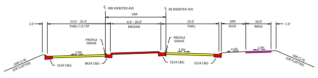
PROPOSED


WB WEBSTER AVE
EB WEBSTER AVE
VAR
18.0' - 22.0' THRU
0' - 21.0' MEDIAN
18.0' - 22.0' THRU / LT / RT
6.0' BLVD
8.0' WALK
PROFILE GRADE
S524 C&G
B424 C&G
VAR (1:4) (OR FLATTER)

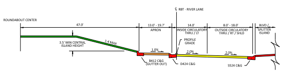
PROPOSED WEBSTER AVE WEST LEG AT TH 169
DESIGN SPEED = 30 MPH
EB WEBSTER AVE STA 302+31.90 TO STA 302+71.00


WB RIVER LN
EB RIVER LN
VAR
10.0' WALK
6.0' - 10.0' BLVD
18.0' - 23.0' THRU / LT / RT
0' - 27.0' MEDIAN
14.0' - 28.0' THRU
0' - 14.0' THRU
PROFILE GRADE
S524 C&G
B424 C&G
VAR (1:4) (OR FLATTER)

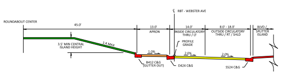
PROPOSED RIVER LN EAST LEG AT TH 169
DESIGN SPEED = 30 MPH
EB RIVER LN STA 306+06.10 TO STA 306+41.30


WB WEBSTER AVE
EB WEBSTER AVE
VAR
23.0' - 25.0' THRU / LT / RT
4.0' - 20.0' MEDIAN
23.0' THRU
VAR BLVD
10.0' WALK
PROFILE GRADE
S524 C&G
B424 C&G
VAR (1:4) (OR FLATTER)

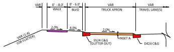
PROPOSED WEBSTER AVE EAST LEG AT TH 169
DESIGN SPEED = 30 MPH
EB WEBSTER AVE STA 304+90.20 TO STA 305+22.20


ROUNDABOUT CENTER
RBT - RIVER LANE
47.0'
3.5' MIN CENTRAL ISLAND HEIGHT
1:4 MAX
13.0' - 19.7' APRON
14.0' INSIDE CIRCULATORY THRU / LT
8.0' - 18.0' OUTSIDE CIRCULATORY THRU / RT / SHLD
BLVD / SPLITTER ISLAND
PROFILE GRADE
B412 C&G (GUTTER OUT)
D424 C&G
S524 C&G

PROPOSED RIVER LN ROUNDABOUT
RIVER LN ROUNDABOUT STA 50+00.00 TO STA 53+77.00

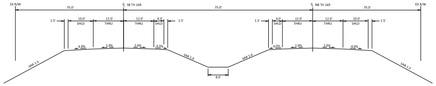

ROUNDABOUT CENTER
RBT - WEBSTER AVE
45.0'
3.5' MIN CENTRAL ISLAND HEIGHT
1:4 MAX
13.0' APRON
14.0' INSIDE CIRCULATORY THRU / LT
8.0' - 18.0' OUTSIDE CIRCULATORY THRU / RT / SHLD
BLVD / SPLITTER ISLAND
PROFILE GRADE
B412 C&G (GUTTER OUT)
D424 C&G
S524 C&G

PROPOSED WEBSTER AVE ROUNDABOUT
WEBSTER AVE ROUNDABOUT STA 50+00.00 TO STA 53+77.00

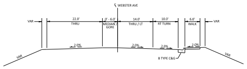

VAR
0' - 8.0' WALK
0' - 6.0' BLVD
VAR TRUCK APRON
VAR TRAVEL LANE(S)
S524 C&G (GUTTER OUT)
INSET A
D424 C&G
VAR (1:4) (OR FLATTER)

DETAIL A - OUTSIDE CONCRETE TRUCK APRON

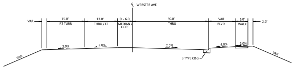
EXISTING


EX R/W
SB TH 169
NB TH 169
75.0'
75.0'
10.0' SHLD
12.0' THRU
12.0' THRU
4.0' SHLD
4.0' SHLD
12.0' THRU
12.0' THRU
10.0' SHLD
VAR 1:4
VAR 1:3
8.0'

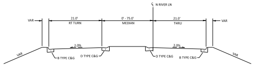
EXISTING TH 169
DESIGN SPEED = 50 MPH
INP NB TH 169 STA 171+71.00 TO STA 210+14.00


WEBSTER AVE
VAR
22.0' THRU
0' - 6.0' MEDIAN GORE
14.0' THRU / LT
10.0' RT TURN
6.0' WALK
B TYPE C&G

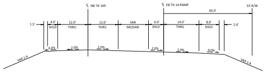
EXISTING WEBSTER AVE WEST LEG AT TH 169
DESIGN SPEED = 30 MPH
INP WEBSTER AVE STA 0+61.10 TO STA 2+03.70


WEBSTER AVE
VAR
15.0' RT TURN
13.0' THRU / LT
0' - 6.0' MEDIAN GORE
30.0' THRU
VAR BLVD
5.0' WALK
B TYPE C&G

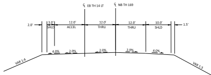
EXISTING WEBSTER AVE EAST LEG AT TH 169
DESIGN SPEED = 30 MPH
EB WEBSTER AVE STA 3+33.50 TO STA 3+95.10


N RIVER LN
VAR
21.0' RT TURN
0' - 75.0' MEDIAN
21.0' THRU
B TYPE C&G
D TYPE C&G

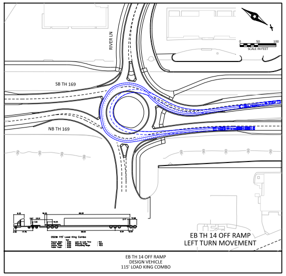
EXISTING RIVER LN EAST LEG AT TH 169
DESIGN SPEED = 30 MPH
INP NB TH 169 STA 200+74.90 OFFSET 21.9' RT TO STA 200+74.90 OFFSET 78.3' RT


NB TH 169
EB TH 14 RAMP
EX R/W
65.0'
4.0' SHLD
12.0' THRU
12.0' THRU
VAR MEDIAN
6.0' SHLD
14.0' THRU
8.0' SHLD
VAR 1:4

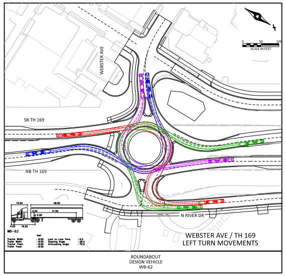
EXISTING EB TH 14 ON RAMP
DESIGN SPEED = 30 MPH
INP NB TH 169 STA 212+28.20 OFFSET 12.9' RT TO STA 216+07.60 OFFSET 38.6' RT


EB TH 14 LT
NB TH 169
13.0' SHLD
12.0' ACCEL
12.0' THRU
12.0' THRU
10.0' SHLD
VAR 1:4
VAR 1:3

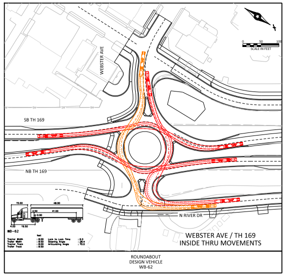
EXISTING EB TH 14 LT
DESIGN SPEED = 30 MPH
INP NB TH 169 STA 217+62.30 OFFSET 87.1' LT TO STA 223+53.50 OFFSET 12' LT


RIVER LN
SB TH 169
NB TH 169
SCALE IN FEET
EB TH 14 OFF RAMP
LEFT TURN MOVEMENT

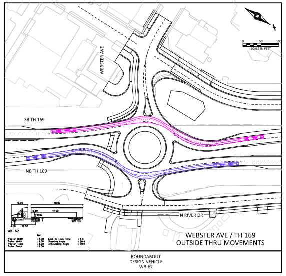
EB TH 14 OFF RAMP
DESIGN VEHICLE
115' LOAD KING COMBO


WEBSTER AVE
SB TH 169
NB TH 169
N RIVER DR
SCALE IN FEET
WB-62
WEBSTER AVE / TH 169
LEFT TURN MOVEMENTS

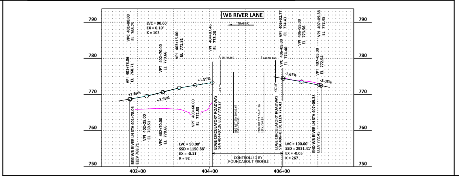
ROUNDABOUT
DESIGN VEHICLE
WB-62

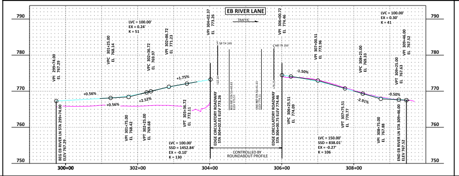

WEBSTER AVE
SB TH 169
NB TH 169
N RIVER DR
SCALE IN FEET
WB-62
WEBSTER AVE / TH 169
INSIDE THRU MOVEMENTS

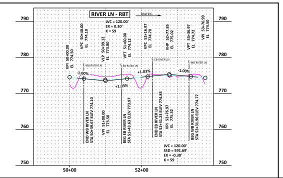
ROUNDABOUT
DESIGN VEHICLE
WB-62

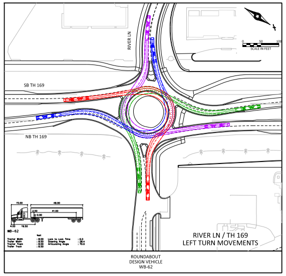

WEBSTER AVE
SB TH 169
NB TH 169
N RIVER DR
SCALE IN FEET
WB-62
WEBSTER AVE / TH 169
OUTSIDE THRU MOVEMENTS

ROUNDABOUT
DESIGN VEHICLE
WB-62

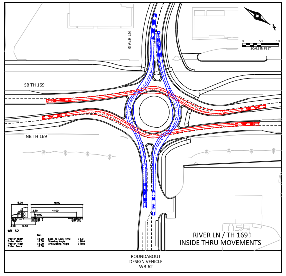




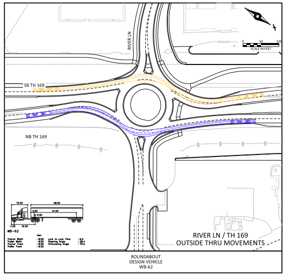



RIVER LN
SB TH 169
NB TH 169
SCALE IN FEET
WB-62
RIVER LN / TH 169
LEFT TURN MOVEMENTS

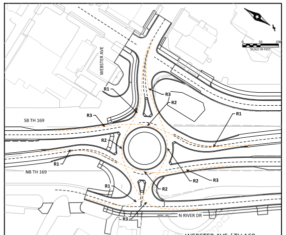
ROUNDABOUT
DESIGN VEHICLE
WB-62


RIVER LN
SB TH 169
NB TH 169
SCALE IN FEET
WB-62
RIVER LN / TH 169
INSIDE THRU MOVEMENTS

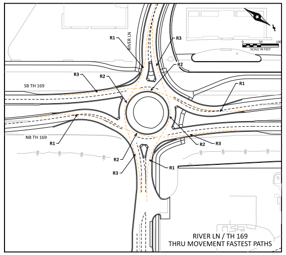
ROUNDABOUT
DESIGN VEHICLE
WB-62


RIVER LN
SB TH 169
NB TH 169
SCALE IN FEET
WB-62
RIVER LN / TH 169
OUTSIDE THRU MOVEMENTS

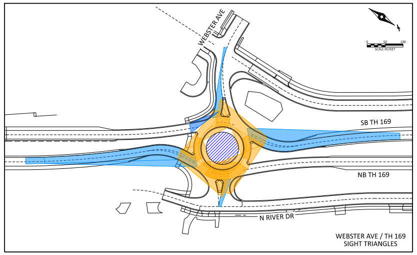
ROUNDABOUT
DESIGN VEHICLE
WB-62


WEBSTER AVE
SB TH 169
NB TH 169
N RIVER DR
R1
R2
R3

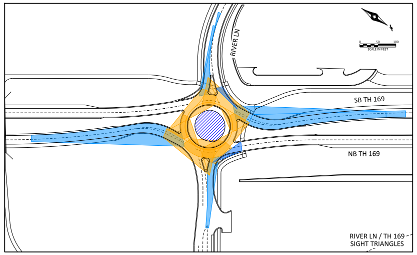
WEBSTER AVE / TH 169
THRU MOVEMENT FASTEST PATHS


RIVER LN
SB TH 169
NB TH 169
R1
R2
R3

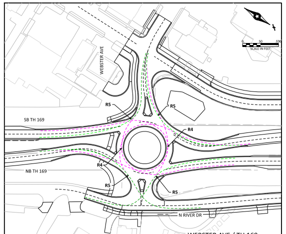
RIVER LN / TH 169
THRU MOVEMENT FASTEST PATHS


WEBSTER AVE
SB TH 169
NB TH 169
N RIVER DR

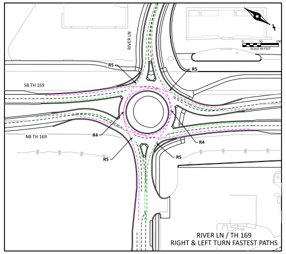
WEBSTER AVE / TH 169
SIGHT TRIANGLES


RIVER LN
SB TH 169
NB TH 169

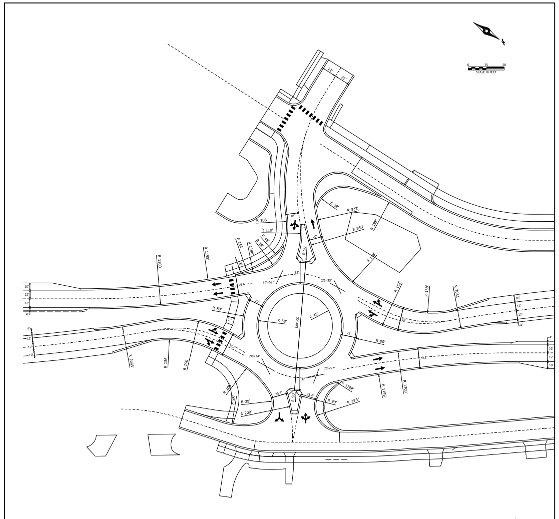
RIVER LN / TH 169
SIGHT TRIANGLES


WEBSTER AVE
SB TH 169
NB TH 169
N RIVER DR
R4
R5

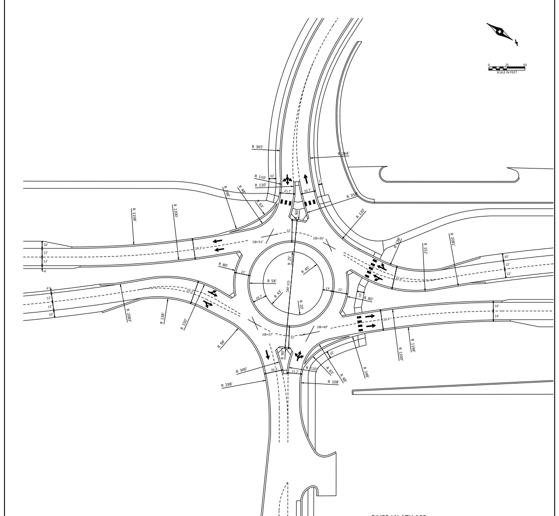
WEBSTER AVE / TH 169
RIGHT & LEFT TURN FASTEST PATHS


RIVER LN
SB TH 169
NB TH 169
R4
R5

RIVER LN / TH 169
RIGHT & LEFT TURN FASTEST PATHS



WEBSTER AVE / TH 169
DETAIL VIEW



RIVER LN / TH 169
DETAIL VIEW

TH 169 & WEBSTER AVE - DESIGN SPEED SUMMARY

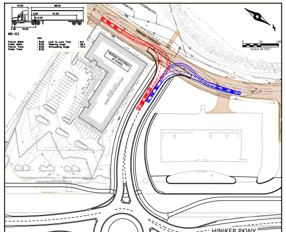
APPROACH	CURVE	RADIUS (FT)	e (FT/FT)	SPEED (MPH) (2)	SPEED DIFFERENCE (MPH) (1)	ICD (FT)	PHI (DEGREE)	HALF WIDTH (FT)	ENTRY WIDTH (FT)	ENTRY RADIUS (FT)
NB TH 169	R1	235	0.02	28.3	11.2	180	17	28	32.7	150
	R2	204	-0.02	24.4	7.3					
	R3	704	-0.02	35.6	(3)					
	R4	84	-0.02	17.6	0.5					
	R5	266	0.02	29.7	12.6					
SB TH 169	R1	240	0.02	28.6	11.5	180	17	28	32.6	150
	R2	196	-0.02	24.1	7					
	R3	554	-0.02	35.4	(3)					
	R4	84	-0.02	17.6	0.5					
	R5	198	0.02	26.5	9.4					
EB WEBSTER	R1	145	0.02	23.5	6.4	160	26	20	23.4	110
	R2	95	-0.02	18.4	1.3					
	R3	84	-0.02	17.6	(3)					
	R4	78	-0.02	17.1	0					
	R5	69	0.02	17.6	0.5					
WB WEBSTER	R1	73	0.02	18	0.9	160	28	23	23.5	90
	R2	102	-0.02	18.9	1.8					
	R3	704	-0.02	33	(3)					
	R4	78	-0.02	17.1	0					
	R5	85	0.02	19.1	2					

NOTES:
(1) RELATIVE SPEED DIFFERENCE IS FROM THE MINIMUM SPEED IN THE ROUNDABOUT, TYPICALLY R4 VALUE.
(2) DERIVED SPEED MAY NOT REFLECT ACTUAL DRIVING CONDITION.
(3) R3 = R2 + ACCELERATION FROM R2 TO CROSSWALK AT EXIT, APPROXIMATELY 50-FT, RESULTING IN A 10 MPH INCREASE IN SPEED.

TH 169 & RIVER LANE - DESIGN SPEED SUMMARY

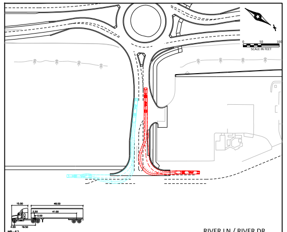
APPROACH	CURVE	RADIUS (FT)	e (FT/FT)	SPEED (MPH) (2)	SPEED DIFFERENCE (MPH) (1)	ICD (FT)	PHI (DEGREE)	HALF WIDTH (FT)	ENTRY WIDTH (FT)	ENTRY RADIUS (FT)
NB TH 169	R1	234	0.02	28.3	10.5	180	18	28	30.6	150
	R2	203	-0.02	24.4	6.6					
	R3	611	-0.02	38.5	(3)					
	R4	86	-0.02	17.8	0					
	R5	128	0.02	22.4	4.6					
SB TH 169	R1	231	0.02	28.1	10.3	180	18	28	32.5	150
	R2	211	-0.02	24.7	6.9					
	R3	672	-0.02	36.7	(3)					
	R4	86	-0.02	17.8	0					
	R5	161	0.02	24.5	6.7					
EB RIVER LN	R1	159	0.02	24.4	6.6	160	25	20	23.5	110
	R2	94	-0.02	18.4	0.6					
	R3	448	-0.02	32.6	(3)					
	R4	86	-0.02	17.8	0					
	R5	98	0.02	20.2	2.4					
WB RIVER LN	R1	182	0.02	25.7	7.9	160	25	20	23	110
	R2	90	-0.02	18.1	0.3					
	R3	313	-0.02	32.6	(3)					
	R4	86	-0.02	17.8	0					
	R5	103	0.02	20.6	2.8					

NOTES:
(1) RELATIVE SPEED DIFFERENCE IS FROM THE MINIMUM SPEED IN THE ROUNDABOUT, TYPICALLY R4 VALUE.
(2) DERIVED SPEED MAY NOT REFLECT ACTUAL DRIVING CONDITION.
(3) R3 = R2 + ACCELERATION FROM R2 TO CROSSWALK AT EXIT, APPROXIMATELY 50-FT, RESULTING IN A 10 MPH INCREASE IN SPEED.



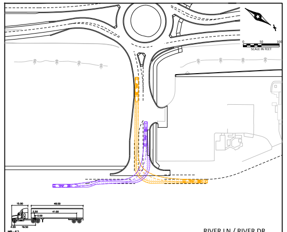
HINIKER PKWY
RIGHT TURN MOVEMENTS

RIVER LN / RIVER DR
DESIGN VEHICLE
WB-62



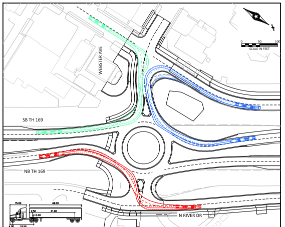
RIVER LN / RIVER DR
RIGHT TURN MOVEMENTS

RIVER LN / RIVER DR
DESIGN VEHICLE
WB-62



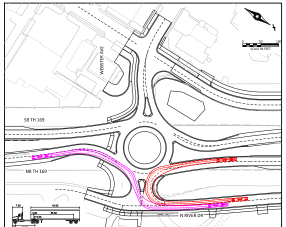
RIVER LN / RIVER DR
LEFT TURN MOVEMENTS

RIVER LN / RIVER DR
DESIGN VEHICLE
WB-62


WEBSTER AVE
SB TH 169
NB TH 169
N RIVER DR
WB-62

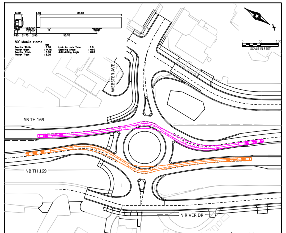
WEBSTER AVE / TH 169
RIGHT TURN MOVEMENTS

ROUNDABOUT
DESIGN VEHICLE
WB-62


WEBSTER AVE
SB TH 169
NB TH 169
N RIVER DR
WB-50

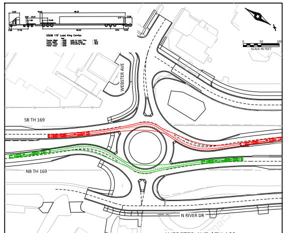
WEBSTER AVE / TH 169
RIGHT TURN MOVEMENTS

ROUNDABOUT
DESIGN VEHICLE
WB-50


80' Mobile Home
WEBSTER AVE
SB TH 169
NB TH 169
N RIVER DR

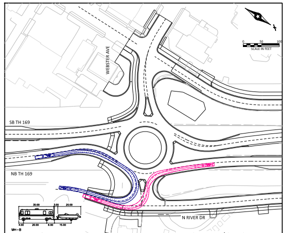
WEBSTER AVE / TH 169
OSOW THRU MOVEMENTS

ROUNDABOUT
DESIGN VEHICLE
80' MOBILE HOME


WEBSTER AVE
SB TH 169
NB TH 169
N RIVER DR

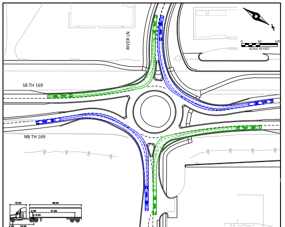
WEBSTER AVE / TH 169
OSOW LOAD KING COMBO THRU MOVEMENTS

ROUNDABOUT
DESIGN VEHICLE
115' LOAD KING COMBO


WEBSTER AVE
SB TH 169
NB TH 169
N RIVER DR

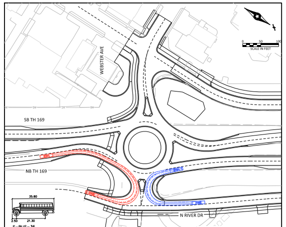
WEBSTER AVE / SIDE STREET
LEFT TURN MOVEMENTS

DESIGN VEHICLE
RV WITH BOAT TRAILER


RIVER LN
SB TH 169
NB TH 169
WB-62

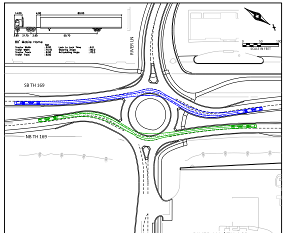
RIVER LN / TH 169
RIGHT TURN MOVEMENTS

ROUNDABOUT
DESIGN VEHICLE
WB-62


WEBSTER AVE
SB TH 169
NB TH 169
N RIVER DR
S-BUS-36

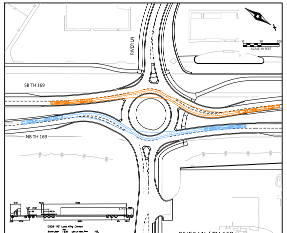
WEBSTER AVE / TH 169
RIGHT TURN MOVEMENTS

ROUNDABOUT
DESIGN VEHICLE
S-BUS-36


80' Mobile Home
RIVER LN
SB TH 169
NB TH 169

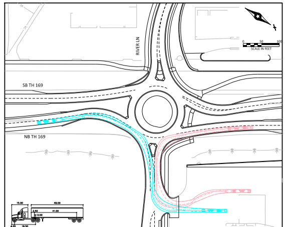
RIVER LN / TH 169
OSOW THRU MOVEMENTS

ROUNDABOUT
DESIGN VEHICLE
80' MOBILE HOME


RIVER LN
SB TH 169
NB TH 169

RIVER LN / TH 169
OSOW LOAD KING COMBO THRU MOVEMENTS

ROUNDABOUT
DESIGN VEHICLE
115' LOAD KING COMBO


RIVER LN
SB TH 169
NB TH 169
WB-62

RIVER LN / KWIK TRIP
TURN MOVEMENTS

KWIK TRIP
DESIGN VEHICLE
WB-62