Level 1 LAYOUT APPROVAL

Programmed Letting Date

Prepared By — District Design or Preliminary Design Engineer — 4/14 2016
Reviewed By — District Traffic Engineer — 4-14- 2016
Reviewed By — for State Geometrics Engineer — 4/21 2016
Approved By — Transportation District Engineer — 4/14 2016
Approved By — State Design Engineer — 4/22 2016

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.

NAME: LIC. NO. 24642 DATE: 04/13 2016

LAYOUT No. 2 COPY No. 1
T.H. 14 VICINITY OF NEW ULM
FROM N. BROADWAY ST. TO 820'S
OF C.S.A.H. 21
Prepared APRIL 13 2016 Scale: Hor. 1 inch = 100 ft.
By HDR, Inc.

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 2035

Prepared NOVEMBER 2014

S.P. 0804-81 T.H. 14 A.J. PPMS Activity
S.P. T.H. A.J. PPMS Activity
S.P. T.H. A.J. PPMS Activity
Copy To: For:

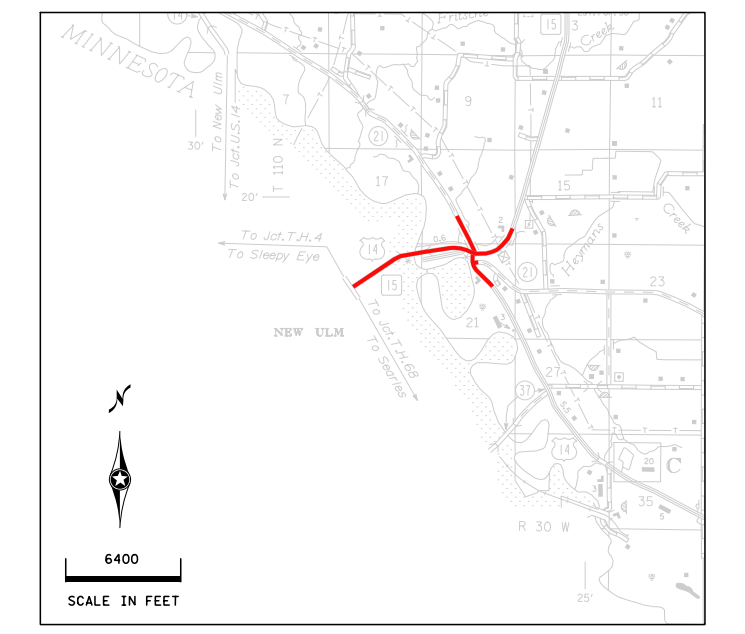
DESIGN FILE: c:\pwworking\oma\d1755416\CP080481_lo.dgn
DATE: 04/13/2016

MINNESOTA DEPARTMENT OF TRANSPORTATION

HDR

LAYOUT HISTORY

AUGUST 5, 2015 - LAYOUT 1 PLOTTED AND PRESENTED TO DISTRICT 7 FOR DISTRIBUTION.
MARCH 28, 2016 - LAYOUT 2 PLOTTED AND PRESENTED TO DISTRICT 7 FOR DISTRIBUTION.
APRIL 13, 2016 - LAYOUT 2: MINOR ALIGNMENT REVISION TO T.H. 15 E.B. AND T.H. 15 W.B. TO MOVE HORIZONTAL CURVES OFF FRONT. ST. BRIDGE LIMITS. MODIFIED GEOMETRY AND COLOR AT BRIDGES TO MATCH PRELIMINARY BRIDGE PLANS.


6400
SCALE IN FEET

LEGEND

🟨	PAVED ROADWAY
🟥	AGGREGATE ROADWAY
🟧	BRIDGES/WALL
🟥	RAISED MEDIANS & CURBS
🟦	PAVED SHOULDERS
🟪	SIDEWALKS
🟫	SHARED USE PATH
🟦	PROPOSED PONDING LOCATION
🟩	LANDSCAPING
🟥	RECONSTRUCTION
●	EXISTING TRAFFIC SIGNAL
—	EXISTING RIGHT OF WAY
⋀	RETAINING WALL
- - -	CONSTRUCTION LIMITS
— —	TEMPORARY EASEMENT
— - —	PROPOSED R/W

LAYOUT NOTES

PROJECT WAS BROKEN INTO THREE SEGMENTS BASED ON SPEED ZONES. SEGMENT 1 (NEW ULM SECTION, 30 MPH DESIGN SPEED) LIMITS WERE FROM TH15EB STATION 0+00 TO 11+50. SEGMENT 2 (BRIDGE SECTION, 50 MPH DESIGN SPEED) LIMITS WERE FROM TH15EB STATION 11+50 TO TH15BL STATION 44+00 R 1. SEGMENT 3 (INTERCHANGE SEGMENT, 60 MPH DESIGN SPEED) LIMITS WERE FROM TH15BL STATION 44+00 R 1 TO 42+85 R 2.

THREE LANE AND FOUR LANE OPTIONS WERE EVALUATED FOR SEGMENT 1. PROJECT TASK FORCE SELECTED THREE LANE OPTION TO MOVE FORWARD.

TWO LANE AND FOUR LANE OPTIONS WERE EVALUATED FOR SEGMENT 2. SUBOPTIONS INCLUDED RETAINING THE EXISTING INTERCHANGE, A ROUNDABOUT, AND A ROUNDABOUT WITH A EB BYPASS LANE. PROJECT TASK FORCE SELECTED TWO LANE OPTION WITH ROUNDABOUT, PROVIDED INTERCHANGE AT TH14/TH15 COULD BE CONSTRUCTED WITH THE PROJECT.

VISSIM ANALYSIS DETERMINED EB BYPASS LANE NOT NEEDED FOR OPERATIONS OF ROUNDABOUT AT FRONT STREET. BYPASS LANE ELIMINATED.

TWO LANE AND FOUR LANE OPTIONS WERE EVALUATED FOR SEGMENT 3. SUBOPTIONS INCLUDED INTERCHANGE WITH ROUNDABOUT AT NORTH RAMP TERMINAL ONLY, INTERCHANGE WITH ROUNDABOUTS AT BOTH RAMP TERMINALS, AND A ROUNDABOUT AT THE TH14/TH15 INTERSECTION. PROJECT TASK FORCE SELECTED TWO LANE OPTION WITH INTERCHANGE AND ROUNDABOUTS AT BOTH RAMP TERMINALS.

ALIGNMENT OPTIONS CONSIDERED FOR RIVER BRIDGE WERE OFFSET EXISTING (MAINTAIN TRAFFIC ON HIGHWAY WHILE CONSTRUCTING NEW BRIDGE), ON EXISTING (CLOSE HIGHWAY AND DETOUR TRAFFIC), AND ON EXISTING (USE ACCELERATED BRIDGE CONSTRUCTION TO SHORTEN DETOUR DURATIONS). EXISTING ALIGNMENT OPTION WAS SELECTED AS ROADWAY APPROACH WOULD ALSO NEED TO BE RECONSTRUCTED WITH THE RIVER BRIDGE. ALSO SOILS OUTSIDE OF EXISTING ROADWAY EMBANKMENT ACROSS THE RIVER VALLEY ARE HIGHLY COMPRESSIBLE SOMAINTAINING EXISTING ALIGNMENT WAS SELECTED.

VE STUDY RECOMMENDATION INCORPORATED REDUCING STRIPED MEDIAN FROM 10 FT WIDE TO 4 FT WIDE.

VE STUDY RECOMMENDATION INCORPORATED REDUCING RAMP WIDTHS TO20 FEET WIDE (16 FOOT RAMP WITH TWO 2 FOOT SHOULDERS) FROM 26 FEET (16 FOOT RAMP WITH FOUR FOOT INSIDE AND 6 FOOT OUTSIDE SHOULDERS).

TRAIL ALONG NORTH SIDE OF TH 15 BETWEEN RIVER BRIDGE AND TH14/15 INTERCHANGE WAS MOVED DOWN THE SLOPE TO REDUCE WALL AND CONCRETE BARRIER.

SLOPES MODIFIED ALONG RAMP D TO ELIMINATE WALL IN THIS AREA.

ALL ROUNDABOUTS ARE MODIFIED TO ACCOMMODATE 115 FT OSOW VEHICLES FOR TRUNK HIGHWAY TO TRUNK HIGHWAY MOVEMENTS.

INTERSECTION OF BROADWAY AND TH 15 IN NEW ULM MODIFIED TO ACCOMMODATE 115 FT OSOW VEHICLES.

PED RAMPS ADDED AT NW AND SW QUADRANTS OF TH 14 AND BROADWAY STREET INTERSECTION.

THRU LANE AND TURN LANE WIDTH DIMENSIONS IN NEW ULM WERE REDUCED TO 11 FT.

WALK1 CONNECTION TO EXISTING CITY TRAIL REVISED TO ELIMINATE RETAINING WALL AND CONFLICT WITH UTILITY POLE.

MNDOT MAINTENANCE ACCESS ADDED IN VICINITY OF TH 15 EB STATION 33+50 FOR SNOOPER TRUCK ON BRIDGE AND BOOM TRUCK ACCESS ALONG BASE OF RETAINING WALL B.

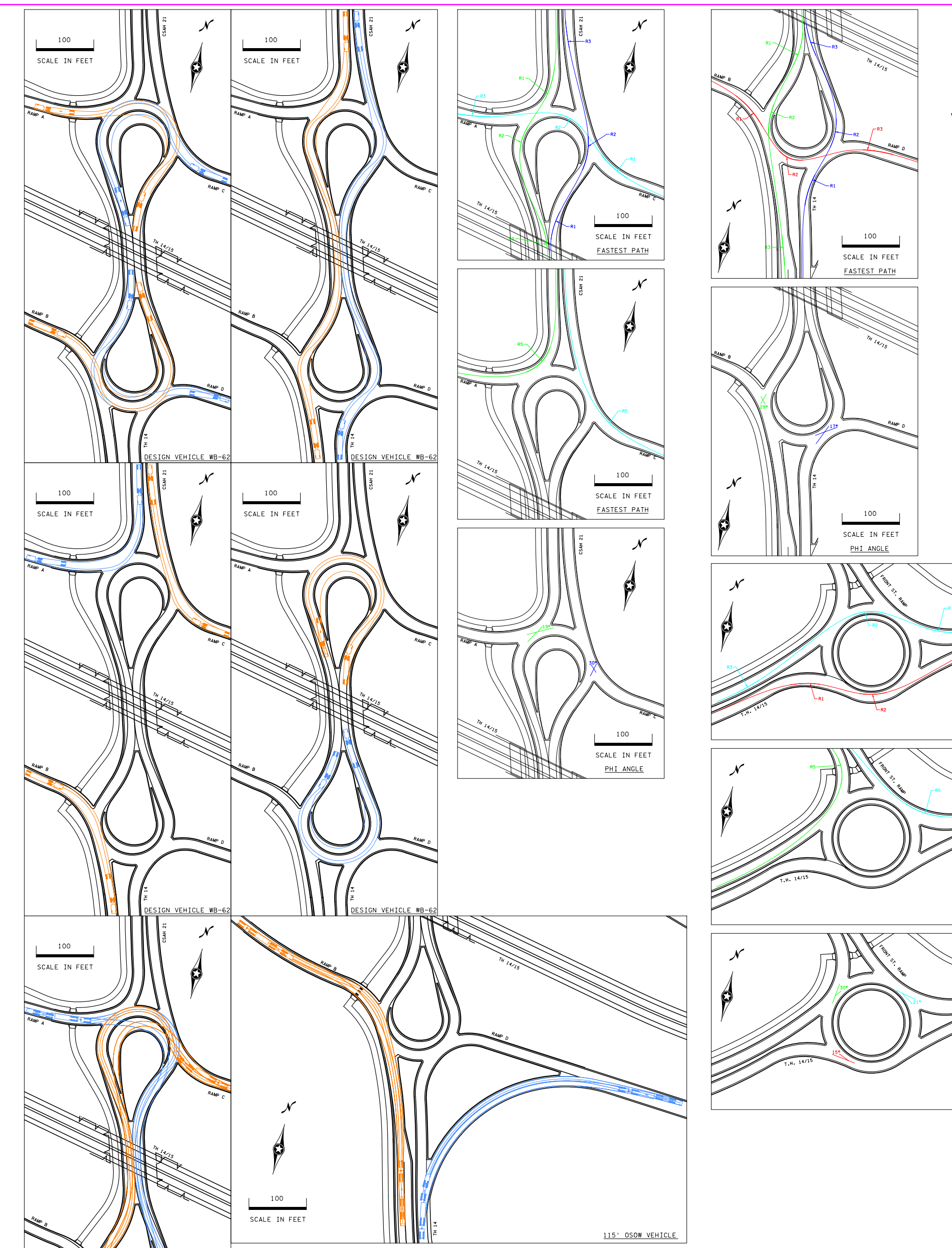
REVISED MAINLINE PROFILE BETWEEN TH 15 STATION 25+00 TO STATION 80+00. CREST VERTICAL CURVE WAS INSERTED ON BRIDGE NUMBER 08016 TO SOLVE DRAINAGE SPREAD ISSUE.

FLATTENED CURVE TH15BL-1 AND MODIFIED RAMP A AND RAMP B ALIGNMENTS AND PROFILES.

ELIMINATED MEDIAN ISLAND BETWEEN TEAR-DROP ROUNDABOUTS ON TH 14. ALSO REDUCED THE BERM WIDTH FROM 10 FT TO 6 FT TO REDUCE THE BRIDGE SPAN FOR BRIDGE NUMBER 52016.

ELIMINATED FREE RIGHT ON RAMP B TO EASTBOUND TH 14.

100
SCALE IN FEET
INPLACE FRONT ST. BRIDGE #9294 - T.H. 14/15
INPLACE RIVER BRIDGE #9200 - T.H. 14/15
PROPOSED TYPICAL IN NEW ULM - RETAINING WALL A
PROPOSED TYPICAL T.H. 15 - RETAINING WALL B
PROPOSED TYPICAL T.H. 15 - RETAINING WALL C
INPLACE TYPICAL T.H. 14/15
INPLACE TYPICAL T.H. 15
CITY OF NEW ULM
BROWN COUNTY
MINNESOTA RIVER
NICOLLET COUNTY
MINNECON PARK
2013 AM/PM PEAK HOUR VOLUMES
2035 AM/PM PEAK HOUR VOLUMES
PROPOSED BRIDGE #08016
PROPOSED BERM
INSET A
INSET B
INSET C POSSIBLE RECONSTRUCTION TO MEET FLOODPLAIN ELEVATION
MATCHLINE SEE LAYOUT
MATCHLINE SEE INSET C
END S.P. 0804-81 T.H. 15 BL 42+84.80
PROPOSED TYPICAL IN NEW ULM
PROPOSED TYPICAL T.H. 14/15 ROUNDABOUT AT FRONT ST
PROPOSED FRONT ST. BRIDGE #08017 - T.H. 14/15
PROPOSED TYPICAL FRONT ST. RAMP RURAL
PROPOSED RIVER BRIDGE #08016 - T.H. 14/15
PROPOSED TYPICAL T.H. 14/15 RAMP C
PROPOSED INTERCHANGE BRIDGE #52016 - T.H. 14/15
PROPOSED TYPICAL FRONT ST. RAMP URBAN
PROPOSED TYPICAL T.H. 14/15 W. OF INTERCHANGE
PROPOSED TYPICAL T.H. 14/15 RAMP A
PROPOSED TYPICAL T.H. 14/15 RAMP B
PROPOSED TYPICAL T.H. 14/15 RAMP D
PROPOSED TYPICAL T.H. 14/15 RAMP D1
PROPOSED GRAVEL ROAD
PROPOSED TYPICAL C.S.A.H. 21
PROPOSED TYPICAL T.H. 14/15 ROUNDABOUTS
PROPOSED BRIDGE 52016
PROPOSED TYPICAL T.H. 14 UNDER BRIDGE
PROPOSED TYPICAL T.H. 15 (BETWEEN RAMPS)
PROPOSED TYPICAL T.H. 15
PROPOSED TYPICAL T.H. 14
PROPOSED TYPICAL T.H. 14 INSET C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SCALE IN FEET
DESIGN VEHICLE WB-62
FASTEST PATH
PHI ANGLE
115' OSOW VEHICLE

ROUNDABOUT DESIGN SPEED SUMMARY NORTH TEARDROP				
APPROACH	CURVE	RADIUS (ft)	E (ft/ft)	SPEED (mph)
SB TH 14	R1	158	0.02	24.3
	R2	97	-0.02	18.6
	R3	146	0.02	23.6
	R4	---	-0.02	N/A
	R5	67	0.02	17.4
WB RAMP C	R1	165	0.02	24.7
	R2	71	-0.02	16.5
	R3	321	0.02	16.5
	R4	58	-0.02	15.4
	R5	165	0.02	24.7
NB TH 14	R1	146	0.02	23.6
	R2	120	-0.02	20.1
	R3	426	0.02	20.1
	R4	59	-0.02	15.5
	R5	---	0.02	N/A

ALL SPEEDS ARE BASED ON NCHRP 672 EQUATIONS.

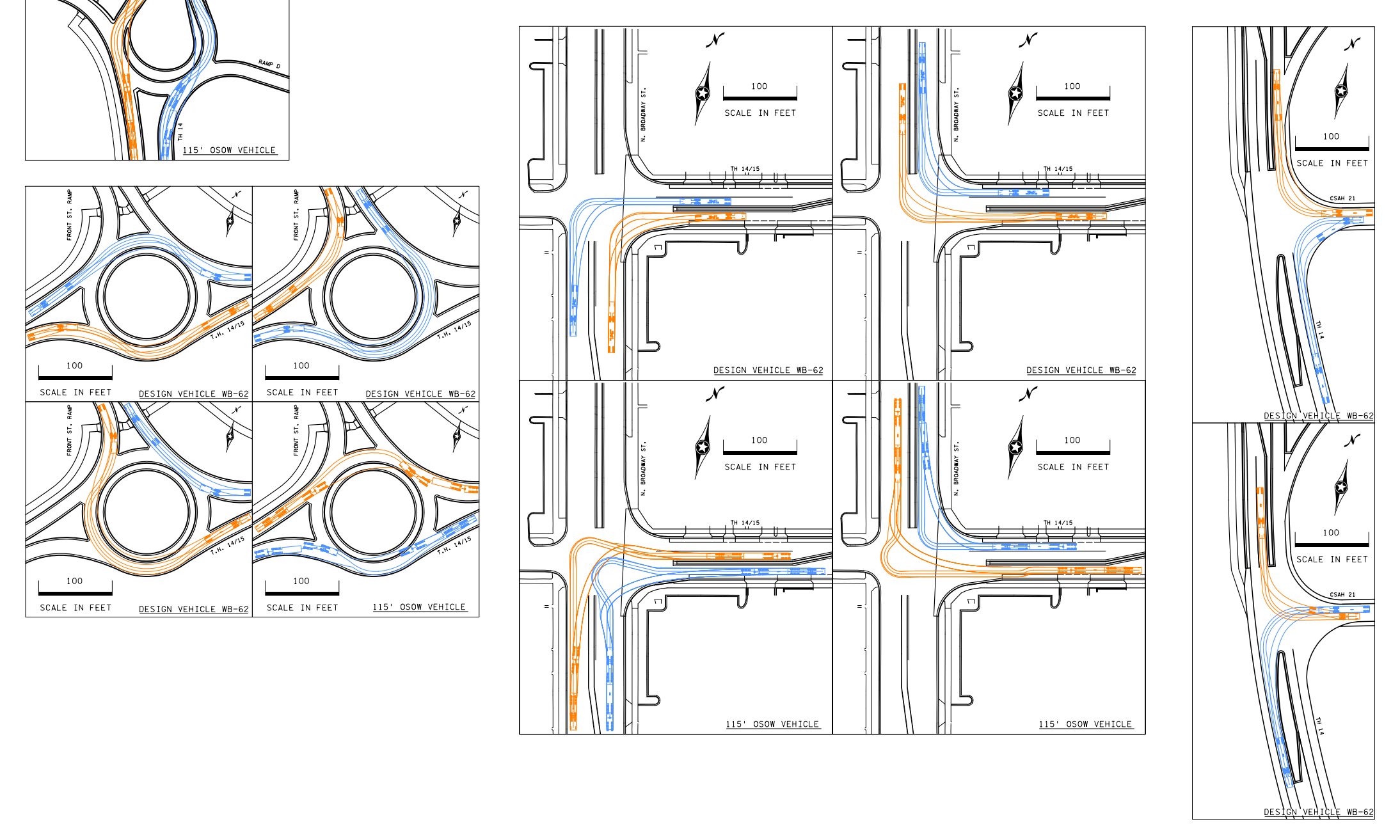
ROUNDABOUT DESIGN SPEED SUMMARY SOUTH TEARDROP				
APPROACH	CURVE	RADIUS (ft)	E (ft/ft)	SPEED (mph)
SB TH 14	R1	143	0.02	23.4
	R2	128	-0.02	20.5
	R3	1180	0.02	20.5
	R4	58	-0.02	15.4
	R5	---	0.02	N/A
EB RAMP B	R1	170	0.02	25
	R2	55	-0.02	15
	R3	236	0.02	28.4
	R4	58	-0.02	15.4
	R5	170	0.02	25
NB TH 14	R1	165	0.02	24.7
	R2	102	-0.02	19
	R3	210	0.02	27.1
	R4	---	-0.02	N/A
	R5	---	0.02	N/A

ALL SPEEDS ARE BASED ON NCHRP 672 EQUATIONS.

ROUNDABOUT DESIGN SPEED SUMMARY TH 14/15 & FRONT ST				
APPROACH	CURVE	RADIUS (ft)	E (ft/ft)	SPEED (mph)
EB TH14/15	R1	158	0.02	24.3
	R2	110	-0.02	19.4
	R3	418	0.02	35.4
	R4	72	-0.02	16.7
	R5	---	0.02	N/A
WB TH14/15	R1	166	0.02	24.8
	R2	86	-0.02	17.8
	R3	392	0.02	34.5
	R4	---	-0.02	N/A
	R5	135	0.02	22.9
SB RAMP A	R1	---	0.02	N/A
	R2	---	-0.02	N/A
	R3	---	0.02	N/A
	R4	72	-0.02	16.7
	R5	68	0.02	17.6

ALL SPEEDS ARE BASED ON NCHRP 672 EQUATIONS.

	NORTH TEARDROP			SOUTH TEARDROP			TH 14/15 & FRONT ST	
	SB TH 14	WB RAMP C	NB TH 14	SB TH 15	EB RAMP B	NB TH 15	EB TH14/15	WB TH14/15
Speed Difference (Consecutive V1-V2)	5.7	8.2	3.5	2.9	10	5.7	4.9	7
Speed Difference (V5 w/ conflicting V4)	1.9	N/A	N/A	N/A	9.6	N/A	N/A	6.2
Speed Difference (V1 w/ conflicting V4)	8.8	N/A	N/A	N/A	9.6	9.3	N/A	8.1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SCALE IN FEET
DESIGN VEHICLE WB-62
115' OSOW VEHICLE