

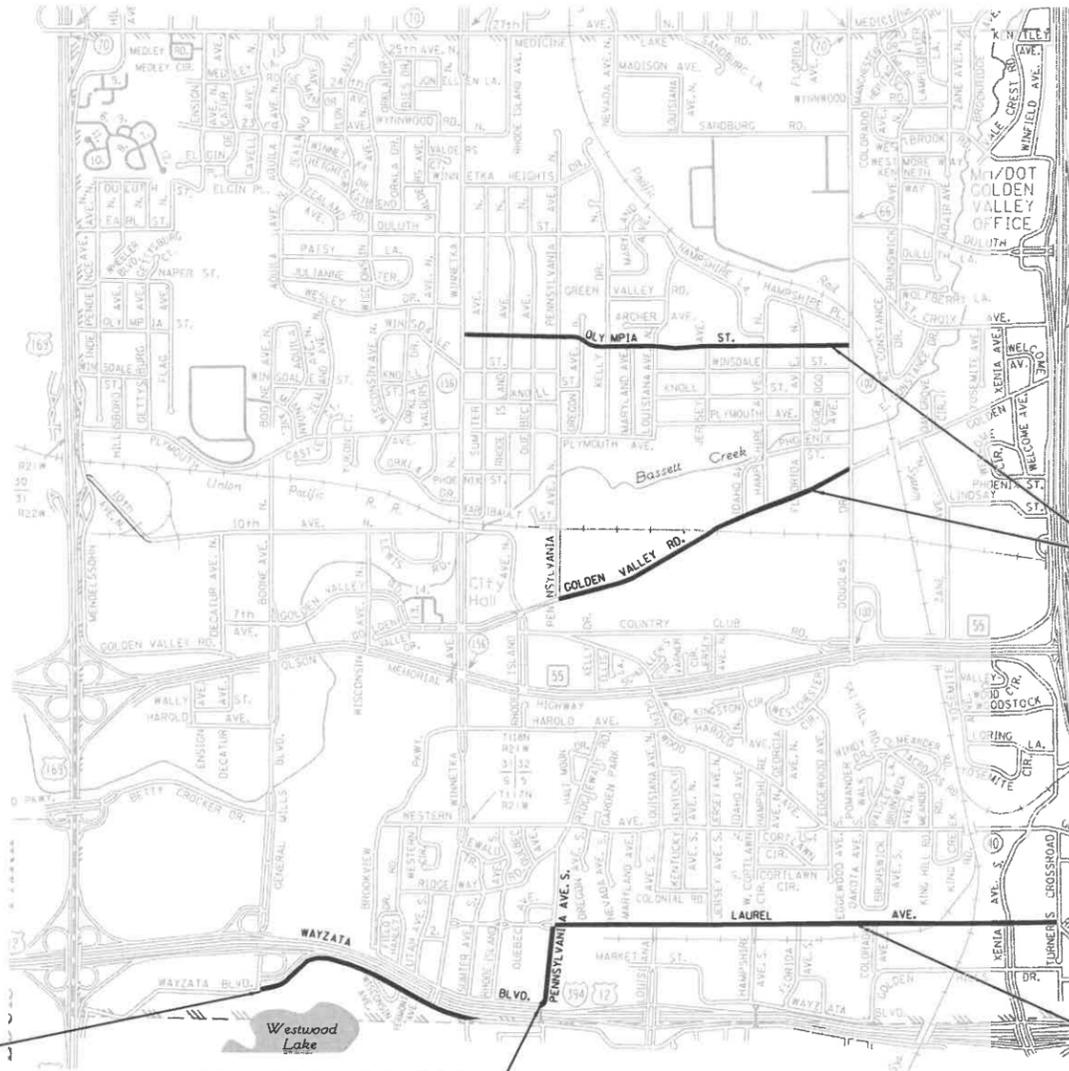
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# CITY OF GOLDEN VALLEY, MINNESOTA

CONSTRUCTION PLAN FOR BIKE PAVEMENT MARKING AND SIGNING.

LOCATIONS: OLYMPIA STREET FROM WINNETKA AVENUE TO DOUGLAS DRIVE  
 GOLDEN VALLEY ROAD FROM PENNSYLVANIA AVENUE TO DOUGLAS DRIVE  
 WAYZATA BOULEVARD FROM GENERAL MILLS BOULEVARD TO TEXAS AVENUE  
 PENNSYLVANIA AVENUE FROM WAYZATA BOULEVARD TO LAUREL AVENUE  
 LAUREL AVENUE FROM PENNSYLVANIA AVENUE TO TURNERS CROSSROAD



MINN. PROJ. NO

GOVERNING SPECIFICATIONS  
 THE 2018 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN EXCEPT AS MODIFIED BY THE SPECIFICATIONS FOR THIS PROJECT.

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO THE MUTCD, INCLUDING "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS", - CURRENT EDITION.

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THIS PLAN HAS 47 SHEETS

## PROJECT LOCATION



CITY OF GOLDEN VALLEY, HENNEPIN COUNTY

APPROVED:   
 CITY OF GOLDEN VALLEY ENGINEER

8/15/19  
 DATE

GOLDEN VALLEY, MINNESOTA



PHONE: (651)490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110



Know what's below.  
 Call before you dig.

PROJECT LOCATION

PROJECT LOCATION

PROJECT LOCATION

FILE: P:\F\J\G\Goldv\148501\5-f\final-dsgn\51-dr-awings\90-GIS\Drawings\Plansheets\148501\_S51.dgn  
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 5/27/2018 4:16 PM jbergerson

9:52:15 AM  
 8/1/2019  
 carv/dson

DESIGN TEAM		
DRAWN BY:	JJP	
DESIGNER:	JJP	
CHECKED BY:	MEK	
NO.	BY	DATE
REVISIONS		

I hereby certify that this plan 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.  
 Certified By:   
 Licensed Professional Engineer Lic. No. 19254  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019

PHONE: (651)490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110



GOLDEN VALLEY  
 BIKE LANES

TITLE SHEET

FILE NO.  
 GOLDV148501  
 S51  
 OF 5530

1  
 47

# SIGNING AND STRIPING PLAN

## NOTES & GUIDELINES

### GENERAL INFORMATION:

THE ENGINEER'S INVOLVEMENT IN THE APPLICATION OF THE MATERIAL SHALL BE LIMITED TO FIELD CONSULTATION AND INSPECTION. THE CONTRACTOR WILL PLACE NECESSARY "SPOTTING" AT APPROPRIATE POINTS TO PROVIDE HORIZONTAL CONTROL FOR STRIPING AND TO DETERMINE NECESSARY STARTING AND CUTOFF POINTS. LONGITUDINAL JOINTS, PAVEMENT EDGES AND EXISTING MARKINGS MAY SERVE AS HORIZONTAL CONTROL WHEN SO DIRECTED.

EDGE LINES AND LANE LINES ARE TO BE BROKEN ONLY AT INTERSECTIONS WITH PUBLIC ROADS AND AT PRIVATE ENTRANCES IF THEY ARE CONTROLLED BY AN AGENCY PLACED YIELD SIGN, STOP SIGN OR TRAFFIC SIGNAL. THE BREAK POINT IS TO BE AT THE START OF THE RADIUS FOR THE INTERSECTION OR AT MARKED STOP LINES OR CROSSWALKS.

A TOLERANCE OF 1/4 INCH UNDER OR 1/4 INCH OVER THE SPECIFIED WIDTH WILL BE ALLOWED FOR STRIPING PROVIDED THE VARIATION IS GRADUAL AND DOES NOT DETRACT FROM THE GENERAL APPEARANCE. BROKEN LINE SEGMENTS MAY VARY UP TO 3 INCHES FROM THE SPECIFIED LENGTHS PROVIDED THE OVER AND UNDER VARIATIONS ARE REASONABLY COMPENSATORY. ALIGNMENT DEVIATIONS FROM THE CONTROL GUIDE SHALL NOT EXCEED 1 INCH. MATERIAL SHALL NOT BE APPLIED OVER LONGITUDINAL JOINTS. ESTABLISHMENT OF APPLICATION TOLERANCES SHALL NOT RELIEVE THE CONTRACTOR OF THEIR RESPONSIBILITY TO COMPLY AS CLOSELY AS PRACTICABLE WITH THE PLANNED DIMENSIONS.

JUST PRIOR TO THE PLACEMENT OF PAVEMENT MARKINGS THE ROAD SURFACE SHALL BE CLEANED AND FREE OF CONTAMINATION AS RECOMMENDED BY THE MATERIAL MANUFACTURER AND ACCEPTABLE TO THE ENGINEER. PORTLAND CEMENT CONCRETE SURFACES SHALL BE SANDBLAST CLEANED TO REMOVE ANY SURFACE TREATMENTS AND/OR LAITANCE.

APPLY ALL PAVEMENT MARKINGS AS RECOMMENDED BY THE MATERIAL MANUFACTURER.

PERMANENT PAVEMENT MARKINGS SHALL NOT BE PLACED OVER TEMPORARY TAPE MARKINGS.

THE FILLING OF TANKS, POURING OF MATERIALS OR CLEANING OF EQUIPMENT SHALL NOT BE PERFORMED ON UNPROTECTED PAVEMENT SURFACES UNLESS ADEQUATE PROVISIONS ARE MADE TO PREVENT SPILLAGE OF MATERIAL.

REFER TO SPECIAL PROVISIONS OR SPEC BOOK FOR GROUND IN/RECESSED PAVEMENT MARKING APPLICATION REQUIREMENTS.

### MULTI-COMPONENT LIQUID:

THE ROAD SURFACE SHALL BE CLEANED AT THE DIRECTION OF THE ENGINEER JUST PRIOR TO APPLICATION. PAVEMENT CLEANING SHALL CONSIST OF AT LEAST BRUSHING WITH A ROTARY BROOM (NON-METALLIC) OR AS RECOMMENDED BY THE MATERIAL MANUFACTURER AND ACCEPTABLE TO THE ENGINEER. NEW PORTLAND CEMENT CONCRETE SURFACES SHALL BE SANDBLAST CLEANED TO REMOVE ANY SURFACE TREATMENTS AND/OR LAITANCE.

THE MULTI-COMPONENT LIQUID MARKING APPLICATION SHALL IMMEDIATELY FOLLOW THE PAVEMENT CLEANING. GLASS BEADS SHALL BE APPLIED IMMEDIATELY AFTER APPLICATION OF THE MULTI-COMPONENT LIQUID PAVEMENT MARKING.

APPLY MULTI-COMPONENT LIQUID MARKINGS WITH A MINIMUM THICKNESS OF 20 MILS; GLASS BEADS SHALL BE APPLIED AT A RATE OF AT LEAST 25 LB/GAL. THE "NO-TRACKING" CONDITION SHALL BE DETERMINED ON AN APPLICATION OF SPECIFIED THICKNESS TO THE PAVEMENT AND COVERED WITH GLASS BEADS AT THE RATE OF AT LEAST 25 LB/GAL.

PAVEMENT MARKINGS SHALL ONLY BE APPLIED IN SEASONABLE WEATHER WHEN AIR AND PAVEMENT SURFACE TEMPERATURES ARE 40°F OR HIGHER AND SHALL NOT BE APPLIED WHEN THE WIND OR OTHER CONDITIONS CAUSE A FILM OF DUST TO BE DEPOSITED ON THE PAVEMENT SURFACE AFTER CLEANING AND BEFORE THE MARKING MATERIAL CAN BE APPLIED.

### PREFORMED MARKINGS:

MANUFACTURER CERTIFICATIONS ARE REQUIRED FOR INSTALLERS, AND WRITTEN CERTIFICATION SHALL BE PRESENTED AT ANYTIME UPON REQUEST OF ENGINEER OR OTHER STATE PERSONNEL.

DO NOT USE LINE MATERIAL TO PIECE TOGETHER INDIVIDUAL LETTERS, SYMBOLS, OR CROSSWALKS BLOCKS. UTILIZE PRECUT KITS PROVIDED BY THE MANUFACTURER. TWO STRIPS OF 18" LINE MATERIAL MAY BE USED TO FORM CROSSWALK BLOCKS OF 36" WIDTH.

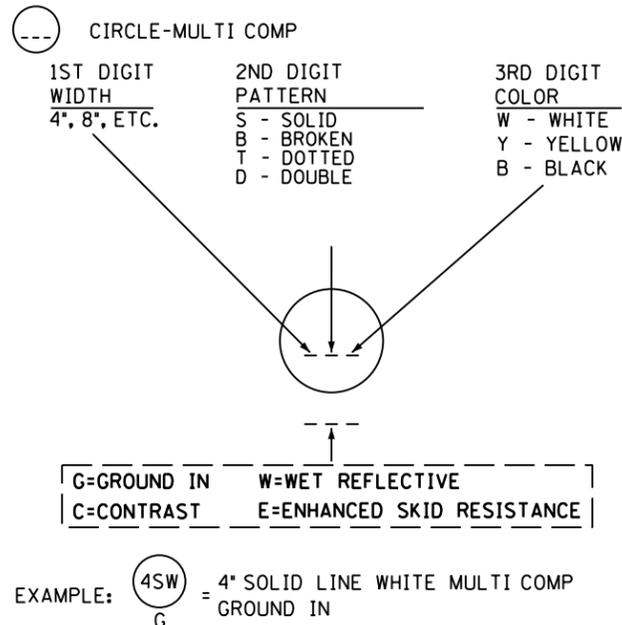
DO NOT USE NARROWER LINE MATERIAL TO PIECE TOGETHER WIDER LINES.

IF THERE IS A CRACK OR JOINT IN ROAD SURFACE. (FOR TAPE LAY OVER CRACK OR JOINT THEN CUT TAPE 1" ON EACH SIDE OF CRACK OR JOINT). (FOR THERMO MAKE A DEEP SCORE IN THE MATERIAL ONCE IT HAS SET UP BUT NOT ENTIRELY COOLED DOWN).

### SYMBOLS & MATERIALS LEGEND

-   BROKEN LINE - 50' CYCLE (10' LINE, 40' GAP)
-     DOTTED LINE - 8' CYCLE (2' LINE, 6' GAP, UNLESS SHOWN OTHER WISE IN THE PLAN)
-  CROSSWALK BLOCK - PREFORM THERMOPLASTIC
-  PAVEMENT MESSAGE (LEFT ARROW) - PREFORM THERMOPLASTIC
-  PAVEMENT MESSAGE (RIGHT ARROW) - PREFORM THERMOPLASTIC
-  PAVEMENT MESSAGE (BIKE CONFLICT ZONE TYPE SPECIAL 1) - PREFORM THERMOPLASTIC
-  PAVEMENT MESSAGE (BIKE CONFLICT ZONE TYPE SPECIAL 2) - PREFORM THERMOPLASTIC
-  PAVEMENT MESSAGE (SHARED LANE) - PREFORM THERMOPLASTIC
-  PAVEMENT MESSAGE (BICYCLE) - PREFORM THERMOPLASTIC
-  PAVEMENT MESSAGE (RAILROAD CROSSING) - PREFORM THERMOPLASTIC
-  PAVEMENT MESSAGE (HANDICAP) - PREFORM THERMOPLASTIC
-  PAVEMENT MESSAGE (PEDESTRIAN) - PREFORM THERMOPLASTIC

### STRIPING KEY



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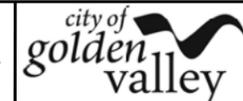
8/1/2019

car-vidson

DESIGN TEAM				
DRAWN BY:	JJP			
DESIGNER:	JJP			
CHECKED BY:	MEK			
	NO.	BY	DATE	REVISIONS

I hereby certify that this plan 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.

Certified By:  Lic. No. 19254  
 Licensed Professional Engineer  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019



GOLDEN VALLEY  
BIKE LANES

SIGNING AND STRIPING PLAN  
TITLE SHEET

FILE NO. GOLDV148501	2
SS2 OF SS30	47

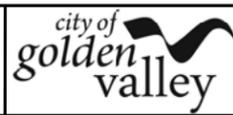
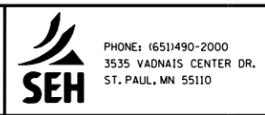
STATEMENT OF ESTIMATED QUANTITIES								-
ITEM NO	ITEM	UNIT	(A)	(B)	(C)	(D)	(E)	TOTAL ESTIMATED QUANTITIES
			ESTIMATED QUANTITY					
	2021.501 MOBILIZATION	LUMP SUM						1
(2)	2102.503 PAVEMENT MARKING REMOVAL	LIN FT		1100	17650		6000	24750
(2)	2102.503 PAVEMENT MARKING REMOVAL	SQ FT		296	340		82	718
	2104.502 REMOVE SIGN TYPE C	EACH		11	10	5	2	28
	2104.502 REMOVE SIGN PANEL TYPE C	EACH		19	7	8		34
	2104.503 REMOVE CURB AND GUTTER	LIN FT		53				53
	2104.518 REMOVE CONCRETE WALK	SQ FT		120				120
	2104.618 REMOVE AND REPLACE BITUMINOUS PAVEMENT (ADA)	SQ FT		110				110
	2301.602 DRILL AND GROUT REINFORCEMENT BAR (EPOXY COATED)	EACH		28				28
	2521.618 CONCRETE WALK (ADA)	SQ FT		870				870
	2531.603 CONCRETE CURB AND GUTTER (ADA)	LIN FT		53				53
	2531.618 TRUNCATED DOMES	SQ FT		32				32
	2563.601 TRAFFIC CONTROL	LUMP SUM						1
	2564.518 SIGN PANELS TYPE C	SQ FT	16	54	95	26	24	214
(1)	2565.602 RIGID PVC LOOP DETECTOR 6'X6'	EACH			8			8
	2575.618 SITE RESTORATION (ADA)	SQ FT		580				580
	2582.503 4" SOLID LINE MULTI COMP GR IN	LIN FT		7200	14000	2175	5600	28975
	2582.503 6" SOLID LINE MULTI COMP GR IN	LIN FT			7500			7500
	2582.503 4" BROKEN LINE MULTI COMP GR IN	LIN FT	910	210	680			1800
	2582.503 4" DBLE SOLID LINE MULTI COMP GR IN	LIN FT			3900	1090	2800	7790
	2582.503 4" DOTTED LINE MULTI COMP GR IN	LIN FT		75	216	24	88	403
	2582.503 6" DOTTED LINE MULTI COMP GR IN	LIN FT			36			36
	2582.503 12" SOLID LINE MULTI COMP GR IN	LIN FT			200			200
	2582.503 24" SOLID LINE MULTI COMP GR IN	LIN FT			160			160
	2582.518 PAVEMENT MESSAGE PREF THERMO GR IN	SQ FT	477	262	565	43	128	1474
	2582.618 PAVEMENT MARKING SPECIAL 1	SQ FT			180			180
	2582.618 PAVEMENT MARKING SPECIAL 2	SQ FT			264			264

NOTES:

- (A) OLYMPIA STREET
- (B) GOLDEN VALLEY RD
- (C) LAUREL AVENUE
- (D) PENNSYLVANIA AVENUE
- (E) WAYZATA BLVD
- (1) LEAD-IN CABLES ARE TO BE INCIDENTAL TO RIGID PVC LOOP DETECTOR 6'X6'.
- (2) REMOVAL IS INCIDENTAL WHEN GROUND IN PAVEMENT MARKINGS ARE INSTALLED DIRECTLY OVER EXISTING PAVEMENT MARKINGS.

DESIGN TEAM				
DRAWN BY: JJP				
DESIGNER: JJP				
CHECKED BY: MEK				
NO.	BY	DATE	REVISIONS	

I hereby certify that this plan 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.  
 Certified By: *Michael E. Kotila* Lic. No. 19254  
 Licensed Professional Engineer  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019



GOLDEN VALLEY BIKE LANES

SIGNING AND STRIPING PLAN  
 STATEMENT OF ESTIMATED QUANTITIES

FILE NO. GOLDV148501	3
SS3 OF SS30	47

### GOLDEN VALLEY PAVEMENT MARKING TABULATION

ITEM	ITEM	UNIT	(A)		(B)		(C)		(D)		(E)		TOTAL ESTIMATED QUANTITY	
			W	Y	W	Y	W	Y	W	Y	W	Y	W	Y
			2582.5	4" SOLID LINE MULTI COMP GR IN	LIN FT			7200		14000		2175		5600
2582.5	6" SOLID LINE MULTI COMP GR IN	LIN FT					7500						7500	
2582.5	4" BROKEN LINE MULTI COMP GR IN	LIN FT		910		210		680						1800
2582.5	4" DBLE SOLID LINE MULTI COMP GR IN	LIN FT						3900		1090		2800		7790
2582.5	4" DOTTED LINE MULTI COMP GR IN	LIN FT			75		216		24		88		403	
2582.5	6" DOTTED LINE MULTI COMP GR IN	LIN FT					36						36	
2582.5	12" SOLID LINE MULTI COMP GR IN	LIN FT						200					200	
2582.5	24" SOLID LINE MULTI COMP GR IN	LIN FT					160						160	
(1) 2582.5	PAVEMENT MESSAGE THERMOPLASTIC GR IN	SQ FT	477		262		565		43		128		1474	
2582.62	PAVEMENT MARKING SPECIAL 1	SQ FT					180						180	
2582.62	PAVEMENT MARKING SPECIAL 2	SQ FT					264						264	
<b>TOTAL</b>			<b>477</b>	<b>910</b>	<b>7537</b>	<b>210</b>	<b>22921</b>	<b>4780</b>	<b>2242</b>	<b>1090</b>	<b>5816</b>	<b>2800</b>		

**LEGEND**

W: WHITE  
 Y: YELLOW

(1) PAVEMENT MESSAGE QUANTITY BREAKDOWN:

- 4 LEFT TURN ARROW (62 SQ FT)
- 4 PEDESTRIAN (18 SQ FT)
- 61 BIKE (649 SQ FT)
- 56 SHARROW (477 SQ FT)
- 4 RAILROAD (248 SQ FT)

**NOTES:**

- (A) OLYMPIA STREET
- (B) GOLDEN VALLEY RD
- (C) LAUREL AVENUE
- (D) PENNSYLVANIA AVENUE
- (E) WAYZATA BLVD

DESIGN TEAM			
DRAWN BY:	JJP		
DESIGNER:	JJP		
CHECKED BY:	MEK		
NO.	BY	DATE	REVISIONS

I hereby certify that this plan 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.

Certified By: *Michael E. Kotila* Lic. No. 19254  
 Licensed Professional Engineer  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019



**GOLDEN VALLEY BIKE LANES**

**SIGNING AND STRIPING PLAN**  
 TABULATIONS

FILE NO. GOLDV148501	4
SS4 OF SS30	47

SIGN PANELS TYPE C (SIGN TALLY)									-
SIGN	(A)	(B)	(C)	(D)	(E)	QTY	CODE NO	PANEL	
C-1		2	2		2	6	R3-17 R3-9cP	BIKE LANE BEGIN	
C-2		4	11	1		16	R7-9a	NO PARKING BIKE LANE	
C-3		2	2	1	2	7	R3-17 R3-17bP	BIKE LANE ENDS	
(2) C-4			1			1	R3-8AD R7-9a	L-T NO PARKING BIKE LANE	
C-5			2			2	R1-X3 mod.	EXCEPT BUSES	
(2) C-6		13	5	4		22	R7-9a	NO PARKING BIKE LANE	
C-7	4					4	R4-11	BIKE MAY USE FULL	
C-8		1				1	W16-7mpL	DOWN AND LEFT ARROW	
C-9			2			2	R3-8AD	L-TR	
C-10		A	4			4	R3-17	BIKE LANE	
(2) C-11			1			1	R3-17	BIKE LANE	
(2) C-12			1			1	R3-8AD	L-TR	
(2) C-13				2		2	R3-17 R3-9cP	BIKE LANE BEGIN	
C-14			1			1	R9-6 R7-9a	BIKES YIELD TO PEDS NO PARKING BIKE LANE	
<b>TOTAL</b>						<b>70</b>			

**SPECIFIC NOTES:**

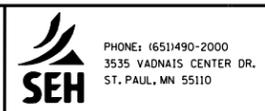
- (1) MOUNTING HEIGHT IS MINIMUM (WITH A +6 INCH TOLERANCE). SEE SHEET 28 FOR TYPICAL MOUNTING.
- (2) MOUNT ON INPLACE POST

**NOTES:**

- (A) OLYMPIA STREET
- (B) GOLDEN VALLEY RD
- (C) LAUREL AVENUE
- (D) PENNSYLVANIA AVENUE
- (E) WAYZATA BLVD

DESIGN TEAM				
DRAWN BY: JJP				
DESIGNER: JJP				
CHECKED BY: MEK				
NO.	BY	DATE	REVISIONS	

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 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019



**GOLDEN VALLEY BIKE LANES**

**SIGNING AND STRIPING PLAN**  
 TABULATIONS

FILE NO. GOLDV148501	5
SS5 OF SS30	47

SIGN PANELS TYPE C (SIGN AREAS)															-	
SIGN	QTY	POSTS			MTG HT (1)	PANEL								CODE NO	PANEL	
		NO & TYPE	KNEE BRACES QTY	LENGTH FEET		SIZE INCH	AREA SQ FT	(A)	(B)	(C)	(D)	(E)	TOTAL AREA SQ FT			
								SQ FT	SQ FT	SQ FT	SQ FT	SQ FT				
C-1	6	1-U		16	7	18 x 24	3.00		6.00	6.00		6.00	18.00	R3-17	BIKE LANE	
						18 x 12	1.50		6.00	6.00		6.00	18.00	R3-9cP	BEGIN	
C-2	16	1-U		14	7	12 x 18	1.50		6.00	16.50	1.50		24.00	R7-9a	NO PARKING BIKE LANE	
C-3	7	1-U		16	7	18 x 24	3.00		6.00	6.00	3.00	6.00	21.00	R3-17	BIKE LANE	
						18 x 12	1.50		6.00	6.00	3.00	6.00	21.00	R3-17bP	ENDS	
(2) C-4	1				7	36 x 30	7.50			7.50			7.50	R3-8AD	LEFT, THROUGH/RIGHT	
C-5	2	2-U		16	7	12 x 18	1.50			3.00			3.00	R7-9a	NO PARKING BIKE LANE	
						24 x 18	3.00			3.00			3.00	R1-X3 mod.	EXCEPT BUSES	
(2) C-6	22				7	12 x 18	1.50		19.50	7.50	6.00		33.00	R7-9a	NO PARKING BIKE LANE	
C-7	4	1-U		17	7	24 x 24	4.00	16.00					16.00	R4-11	BIKE MAY USE FULL	
(2) C-8	1					24 x 24	4.00		4.00				4.00	W16-7mpL	DOWN AND LEFT ARROW	
C-14	2	2-U		15	7	36 x 30	7.50			15.00			15.00	R3-8AD	LEFT, THROUGH/RIGHT	
C-10	4	1-U		15	7	18 x 24	3.00			12.00			12.00	R3-17	BIKE LANE	
(2) C-11	1				7	18 x 24	3.00			3.00			3.00	R3-17	BIKE LANE	
(2) C-12	1				7	18 x 24	3.00			3.00			3.00	R3-17	BIKE LANE	
(2) C-13	2				7	18 x 24	3.00				6.00		6.00	R3-17	BIKE LANE	
						18 x 12	1.50				6.00		6.00	R3-9cP	BEGIN	
C-14	1	2-U		16	7	12 x 18	1.50			1.50			1.50	R9-6	BIKES YIELD TO PEDS	
						12 x 18	1.50			1.50			1.50	R7-9a	NO PARKING BIKE LANE	
<b>TOTAL</b>	<b>70</b>								<b>16.00</b>	<b>53.50</b>	<b>94.50</b>	<b>25.50</b>	<b>24.00</b>	<b>213.50</b>		

**SPECIFIC NOTES:**

- (1) MOUNTING HEIGHT IS MINIMUM (WITH A +6 INCH TOLERANCE). SEE SHEET 28 FOR TYPICAL MOUNTING.
- (2) MOUNT ON INPLACE POST

**GENERAL NOTES:**

1. POST LENGTHS ARE APPROXIMATE AND INCLUDE EMBEDMENT, BUT DO NOT INCLUDE ADDITIONAL LENGTH REQUIRED FOR SPLICE.
2. SEE SHEET 25 FOR SIGN PLACEMENT DETAILS.
3. SEE SHEET 27 TO 28 FOR STRUCTURAL DETAILS.
4. SEE MNDOT STANDARD SIGNS AND MARKINGS MANUAL FOR PUNCHING CODE AND DETAILED DRAWINGS OF TYPE C SIGN PANELS.

**NOTES:**

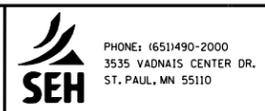
- (A) OLYMPIA STREET
- (B) GOLDEN VALLEY RD
- (C) LAUREL AVENUE
- (D) PENNSYLVANIA AVENUE
- (E) WAYZATA BLVD

DESIGN TEAM			
DRAWN BY:	JJP		
DESIGNER:	JJP		
CHECKED BY:	MEK		

NO.	BY	DATE	REVISIONS

I hereby certify that this plan 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.

Certified By: *Michael E. Kotila* Lic. No. 19254  
 Licensed Professional Engineer  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019

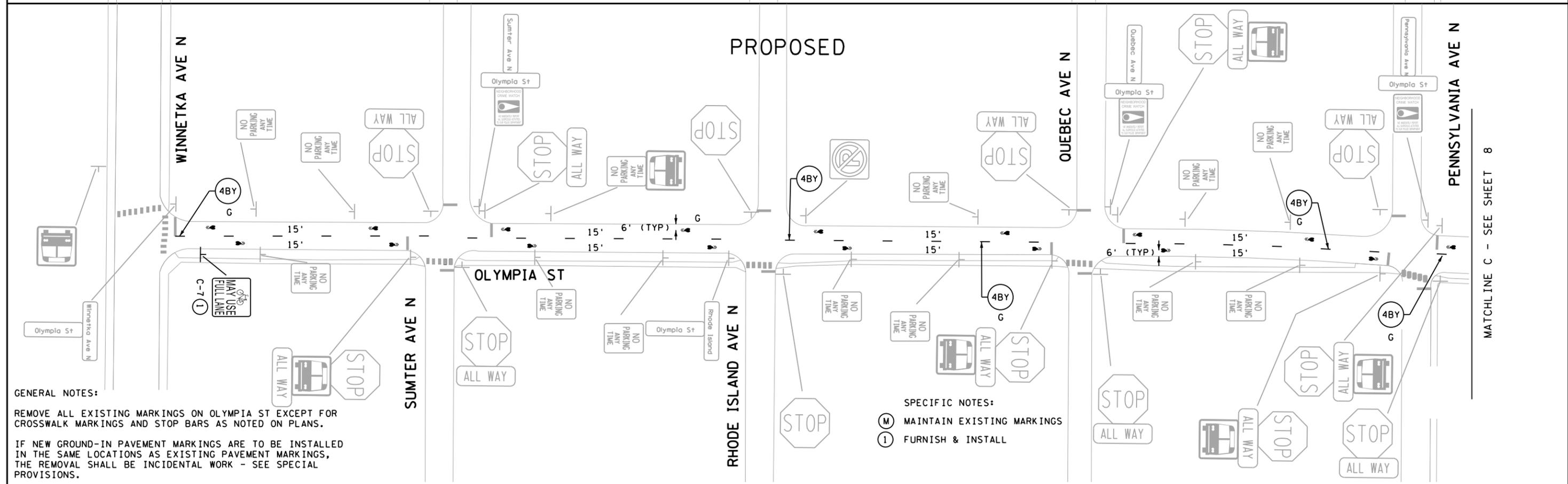
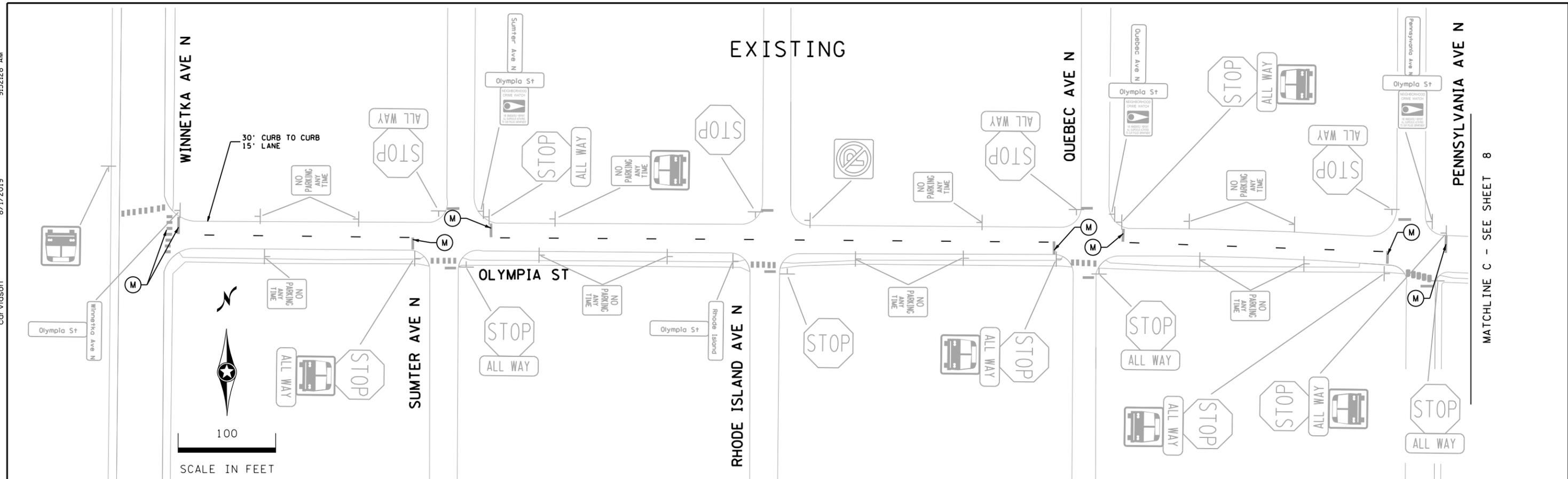


**GOLDEN VALLEY BIKE LANES**

**SIGNING AND STRIPING PLAN**

TABULATIONS

FILE NO. GOLDV148501	6
SS6 OF SS30	47



**GENERAL NOTES:**

REMOVE ALL EXISTING MARKINGS ON OLYMPIA ST EXCEPT FOR CROSSWALK MARKINGS AND STOP BARS AS NOTED ON PLANS.

IF NEW GROUND-IN PAVEMENT MARKINGS ARE TO BE INSTALLED IN THE SAME LOCATIONS AS EXISTING PAVEMENT MARKINGS, THE REMOVAL SHALL BE INCIDENTAL WORK - SEE SPECIAL PROVISIONS.

**SPECIFIC NOTES:**

(M) MAINTAIN EXISTING MARKINGS

(I) FURNISH & INSTALL

DESIGN TEAM			
DRAWN BY:	JJP		
DESIGNER:	JJP		
CHECKED BY:	MEK		
NO.	BY	DATE	REVISIONS

I hereby certify that this plan 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.

Certified By: *Michael E. Kotila* Lic. No. 19254  
 Licensed Professional Engineer  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019

**SEH**  
 PHONE: (651)490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110



**GOLDEN VALLEY BIKE LANES**

**SIGNING AND STRIPING PLAN**  
 OLYMPIA STREET

FILE NO. GOLDV148501	7
SS7 OF SS30	47

MATCHLINE C - SEE SHEET 8

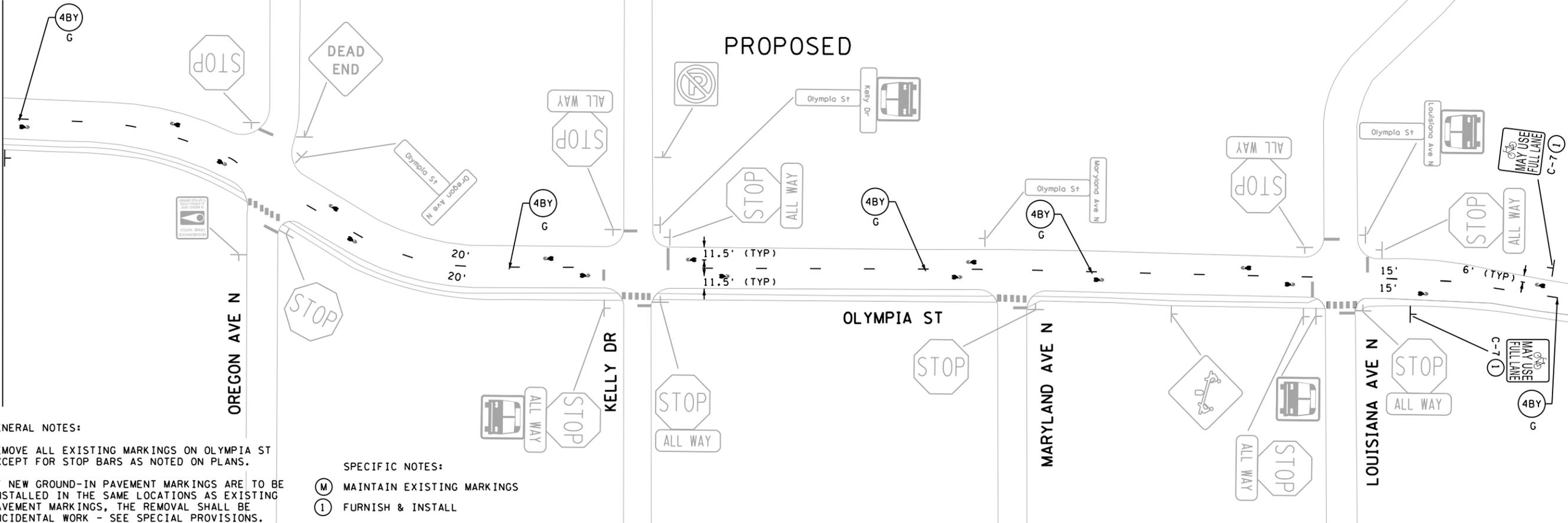
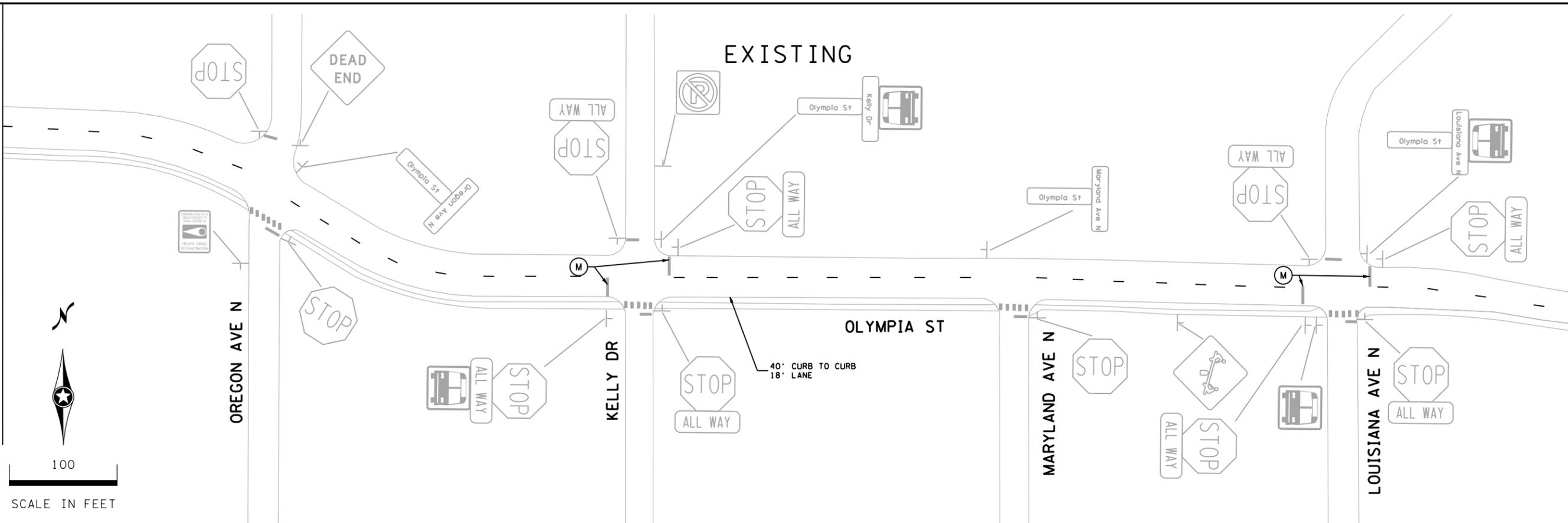
952229 AM 8/1/2019 car-vidson  
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 MODEL: s8

MATCHLINE C - SEE SHEET 7

MATCHLINE C - SEE SHEET 7

MATCHLINE D - SEE SHEET 9

MATCHLINE D - SEE SHEET 9



**GENERAL NOTES:**

REMOVE ALL EXISTING MARKINGS ON OLYMPIA ST EXCEPT FOR STOP BARS AS NOTED ON PLANS.

IF NEW GROUND-IN PAVEMENT MARKINGS ARE TO BE INSTALLED IN THE SAME LOCATIONS AS EXISTING PAVEMENT MARKINGS, THE REMOVAL SHALL BE INCIDENTAL WORK - SEE SPECIAL PROVISIONS.

**SPECIFIC NOTES:**

- (M) MAINTAIN EXISTING MARKINGS
- (I) FURNISH & INSTALL

DESIGN TEAM			
DRAWN BY:	JJP		
DESIGNER:	JJP		
CHECKED BY:	MEK		
NO.	BY	DATE	REVISIONS

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Certified By: *Michael E. Kotila* Lic. No. 19254  
 Licensed Professional Engineer  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019

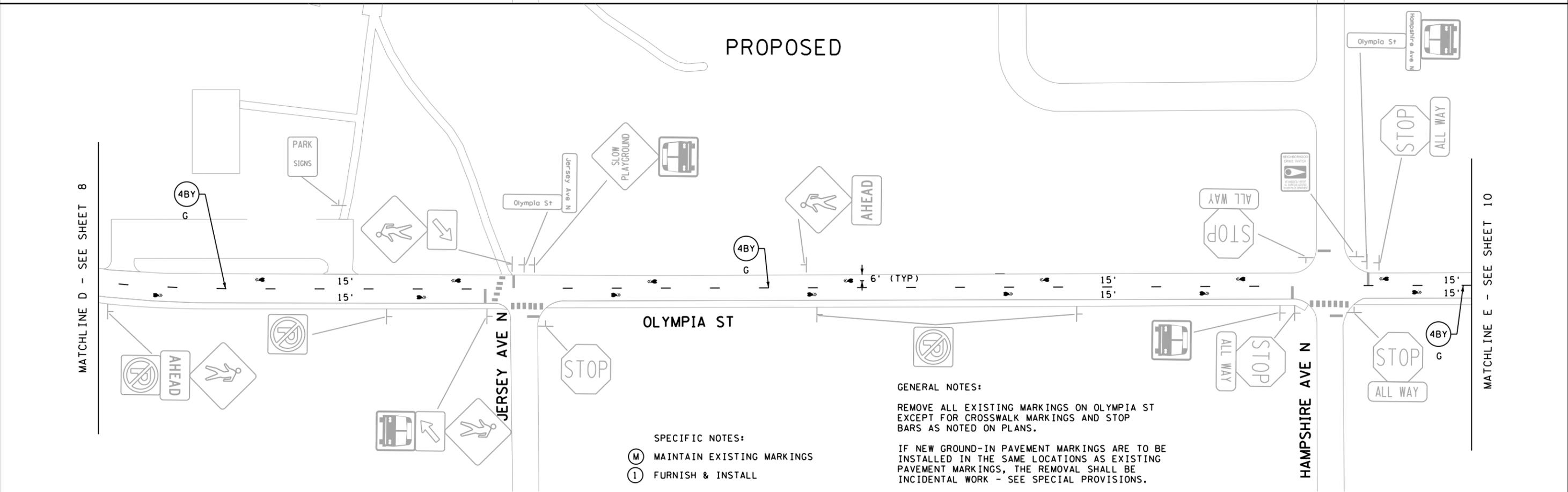
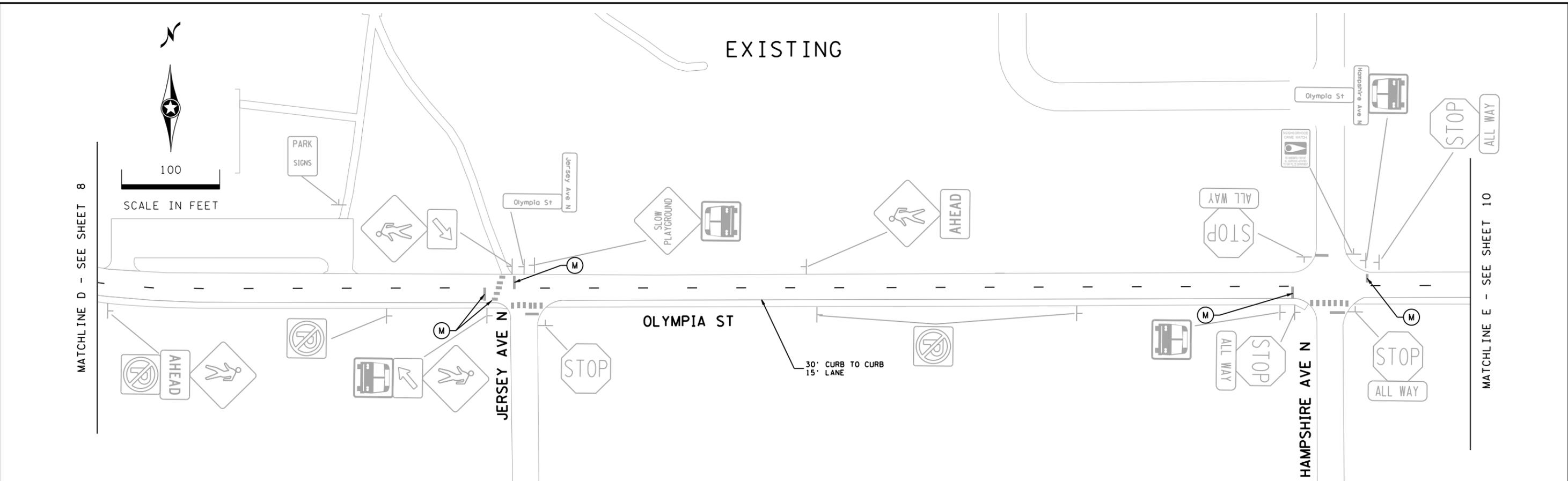


**GOLDEN VALLEY  
BIKE LANES**

**SIGNING AND STRIPING PLAN**  
 OLYMPIA STREET

FILE NO. GOLDV148501	8
SS8 OF SS30	47

FILE: P:\F\J\G\GoldV\148501\5-final-dsgn\51-drawings\90-GIS\Data\DWG\Plansheets\148501\_SS1.dgn  
 MODEL: sss  
 8/1/2019 9:52:31 AM carvidson



- SPECIFIC NOTES:**
- (M) MAINTAIN EXISTING MARKINGS
  - (I) FURNISH & INSTALL

**GENERAL NOTES:**

REMOVE ALL EXISTING MARKINGS ON OLYMPIA ST EXCEPT FOR CROSSWALK MARKINGS AND STOP BARS AS NOTED ON PLANS.

IF NEW GROUND-IN PAVEMENT MARKINGS ARE TO BE INSTALLED IN THE SAME LOCATIONS AS EXISTING PAVEMENT MARKINGS, THE REMOVAL SHALL BE INCIDENTAL WORK - SEE SPECIAL PROVISIONS.

DESIGN TEAM			
DRAWN BY:	JJP		
DESIGNER:	JJP		
CHECKED BY:	MEK		
NO.	BY	DATE	REVISIONS

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Certified By: *Michael E. Kotila* Lic. No. 19254  
 Licensed Professional Engineer  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019

**SEH**  
 PHONE: (651)490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110



**GOLDEN VALLEY  
 BIKE LANES**

**SIGNING AND STRIPING PLAN**  
 OLYMPIA STREET

FILE NO. GOLDV148501	9
SS9 OF SS30	47

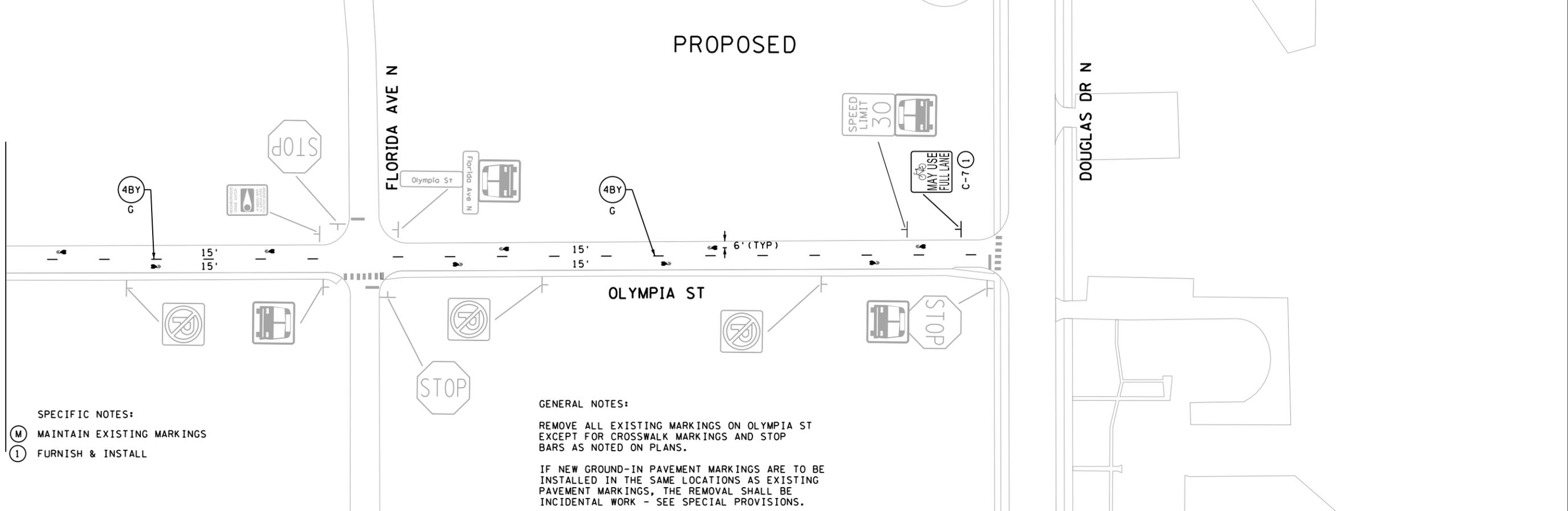
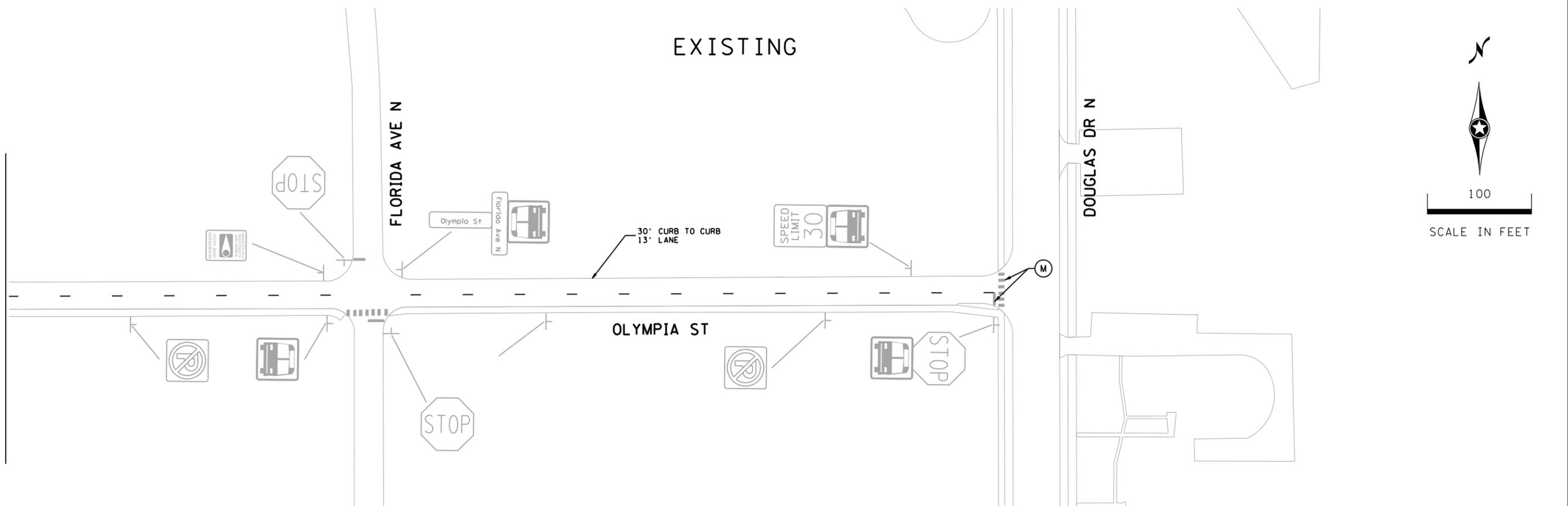
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 8/1/2019 9:52:32 AM car-vidson

MATCHLINE E - SEE SHEET 9

MATCHLINE E - SEE SHEET 9

EXISTING

PROPOSED



**SPECIFIC NOTES:**  
 (M) MAINTAIN EXISTING MARKINGS  
 (I) FURNISH & INSTALL

**GENERAL NOTES:**  
 REMOVE ALL EXISTING MARKINGS ON OLYMPIA ST EXCEPT FOR CROSSWALK MARKINGS AND STOP BARS AS NOTED ON PLANS.  
 IF NEW GROUND-IN PAVEMENT MARKINGS ARE TO BE INSTALLED IN THE SAME LOCATIONS AS EXISTING PAVEMENT MARKINGS, THE REMOVAL SHALL BE INCIDENTAL WORK - SEE SPECIAL PROVISIONS.

DESIGN TEAM			
DRAWN BY:	JJP		
DESIGNER:	JJP		
CHECKED BY:	MEK		
NO.	BY	DATE	REVISIONS

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 Certified By: *Michael E. Kotila* Lic. No. 19254  
 Licensed Professional Engineer  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019

**SEH**  
 PHONE: (651)490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110

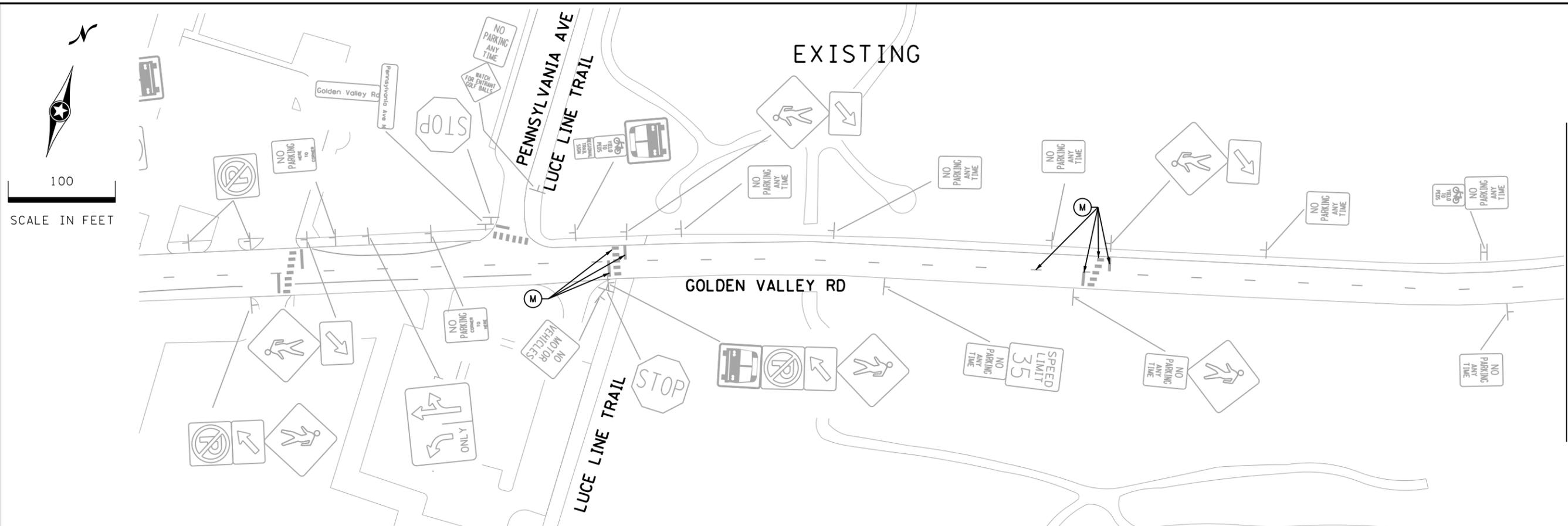


**GOLDEN VALLEY  
 BIKE LANES**

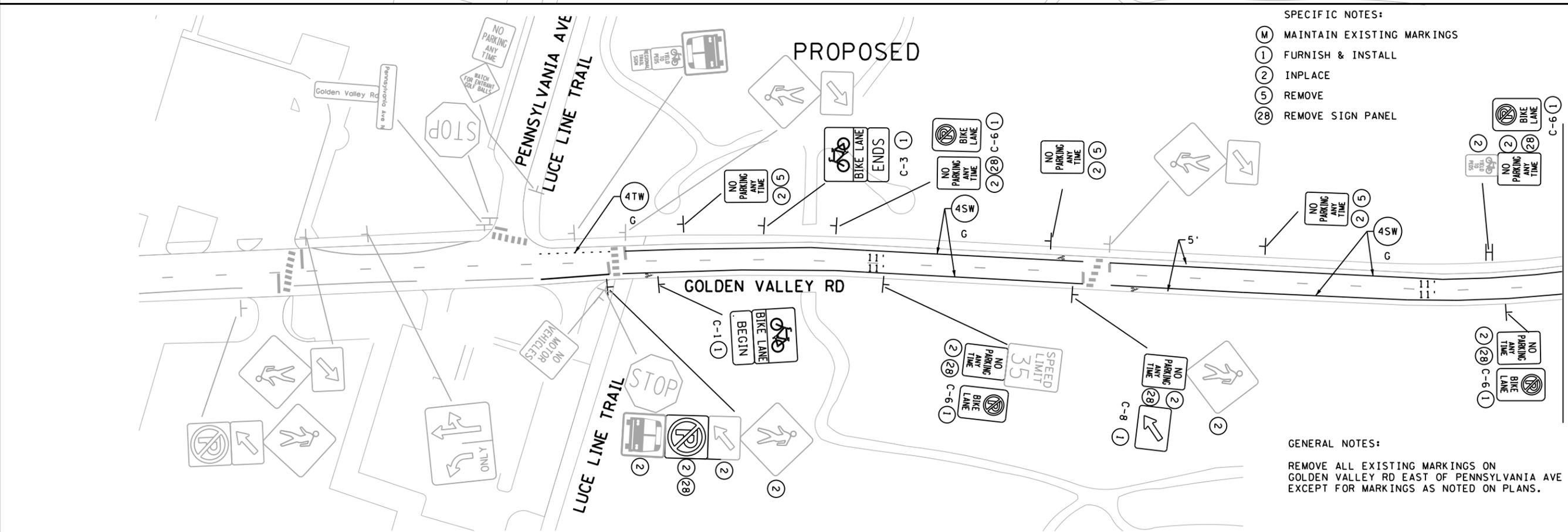
**SIGNING AND STRIPING PLAN**  
 OLYMPIA STREET

FILE NO. GOLDV148501	10
SS10 OF SS30	47

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 8/1/2019 9:52:33 AM car-vidson



MATCHLINE 0 - SEE SHEET 12



MATCHLINE 0 - SEE SHEET 12

- SPECIFIC NOTES:**
- (M) MAINTAIN EXISTING MARKINGS
  - (1) FURNISH & INSTALL
  - (2) INPLACE
  - (5) REMOVE
  - (2B) REMOVE SIGN PANEL

**GENERAL NOTES:**

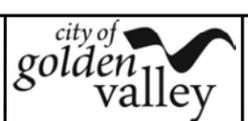
REMOVE ALL EXISTING MARKINGS ON GOLDEN VALLEY RD EAST OF PENNSYLVANIA AVE EXCEPT FOR MARKINGS AS NOTED ON PLANS.

DESIGN TEAM			
DRAWN BY:	JJP		
DESIGNER:	JJP		
CHECKED BY:	MEK		
NO.	BY	DATE	REVISIONS

I hereby certify that this plan 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.

Certified By: *Michael E. Kotila* Lic. No. 19254  
 Licensed Professional Engineer  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019

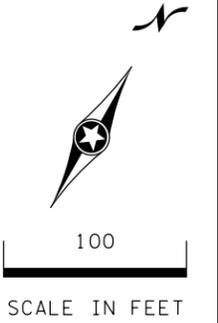
**SEH**  
 PHONE: (651)490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110



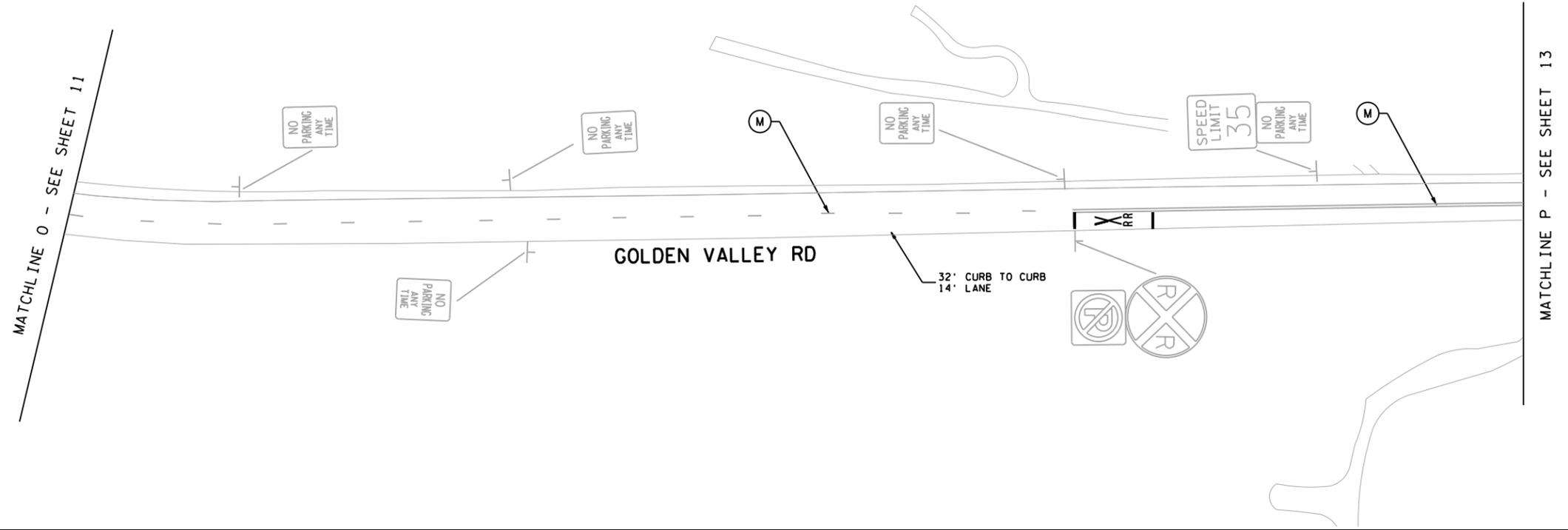
**GOLDEN VALLEY BIKE LANES**

**SIGNING AND STRIPING PLAN**  
 GOLDEN VALLEY ROAD

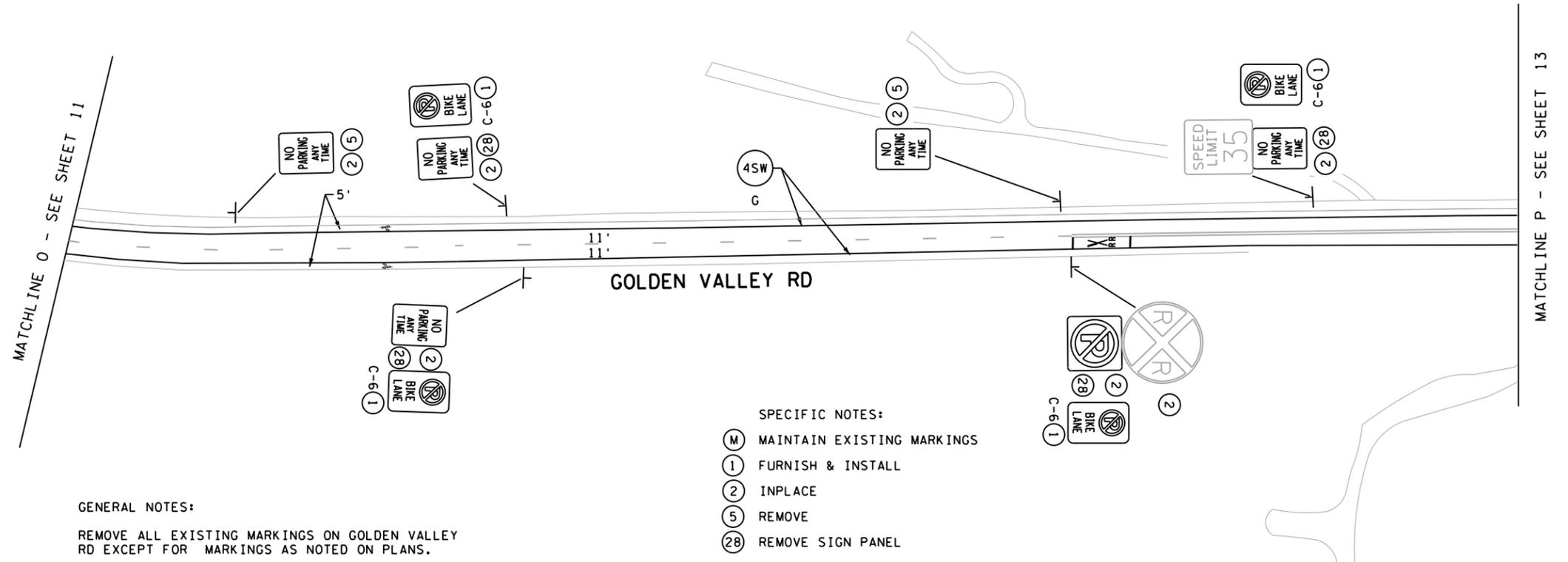
FILE NO. GOLDV148501	11
SS11 OF SS30	47



### EXISTING



### PROPOSED



#### GENERAL NOTES:

REMOVE ALL EXISTING MARKINGS ON GOLDEN VALLEY RD EXCEPT FOR MARKINGS AS NOTED ON PLANS.

#### SPECIFIC NOTES:

- (M) MAINTAIN EXISTING MARKINGS
- (1) FURNISH & INSTALL
- (2) INPLACE
- (5) REMOVE
- (28) REMOVE SIGN PANEL

DESIGN TEAM				REVISIONS			
DRAWN BY:	JJP			NO.	BY	DATE	
DESIGNER:	JJP						
CHECKED BY:	MEK						

I hereby certify that this plan 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.  
 Certified By: *Michael E. Kotila* Lic. No. 19254  
 Licensed Professional Engineer  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019



**GOLDEN VALLEY BIKE LANES**

**SIGNING AND STRIPING PLAN**  
 GOLDEN VALLEY ROAD

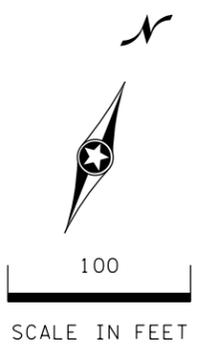
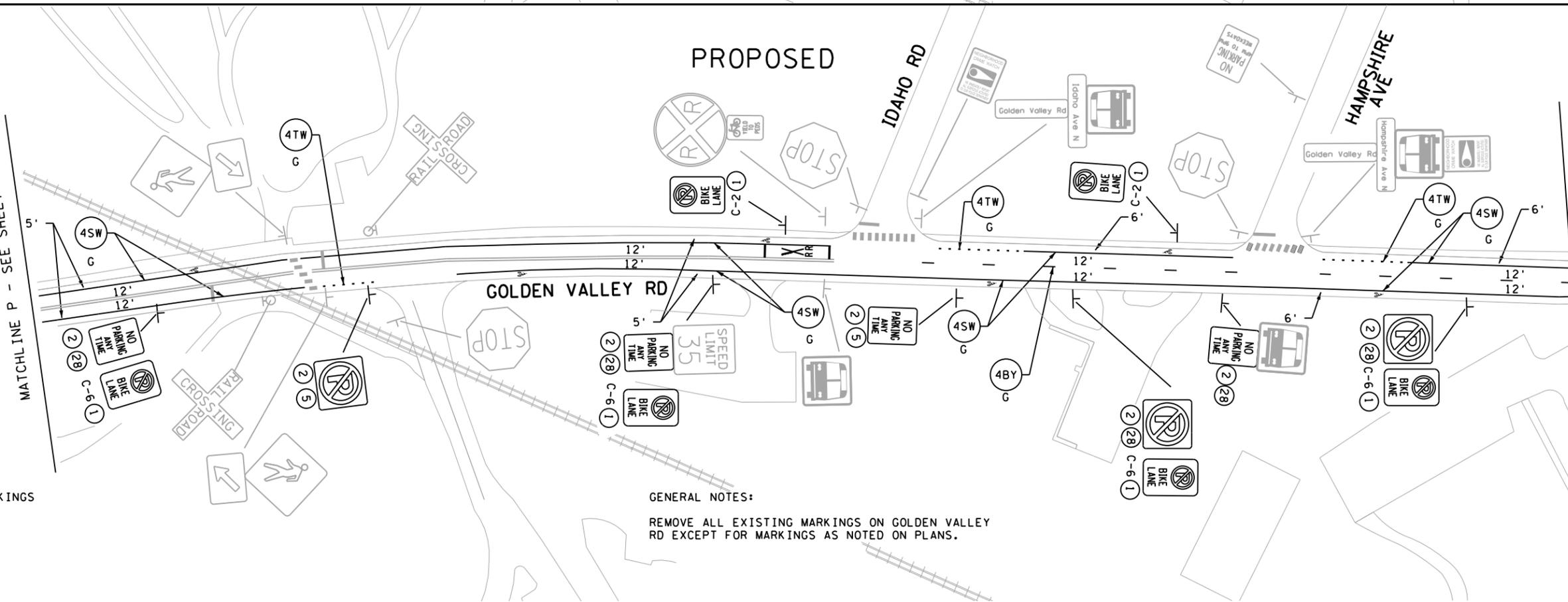
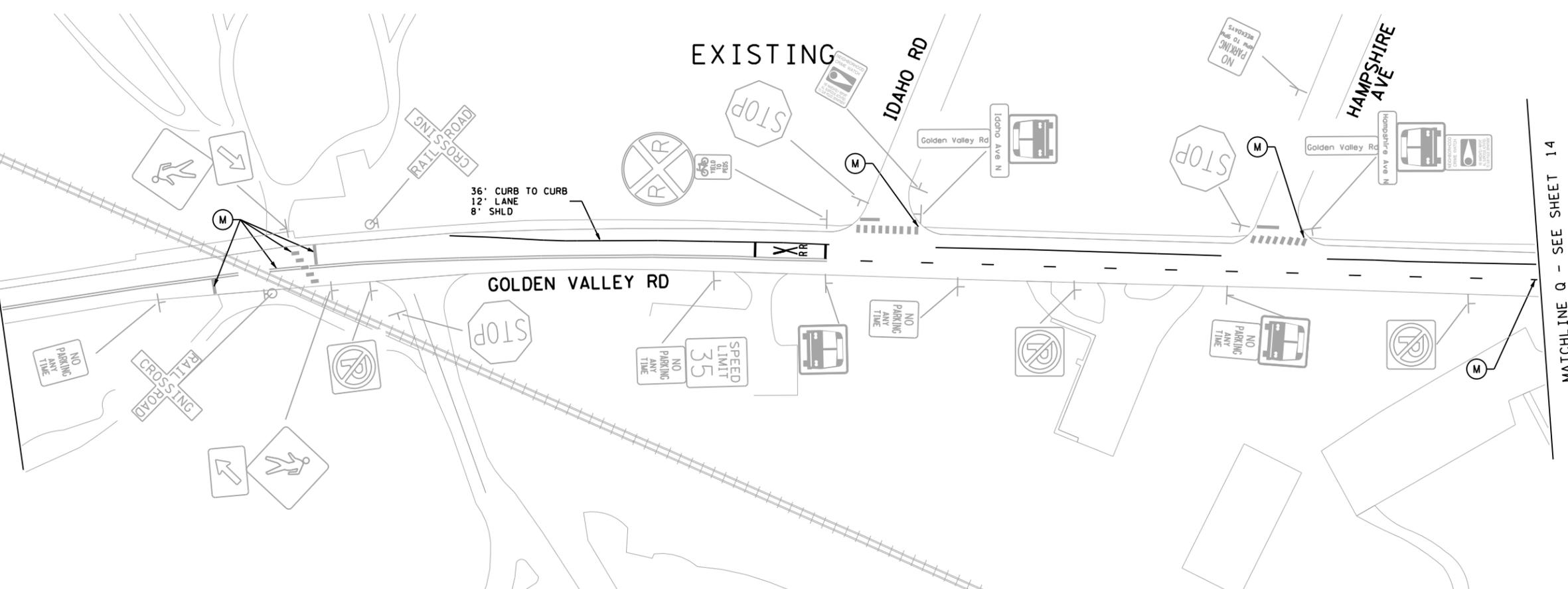
FILE NO.	12
GOLDV148501	
SS12	47
OF SS30	

MATCHLINE P - SEE SHEET 12

MATCHLINE Q - SEE SHEET 14

### EXISTING

### PROPOSED



- SPECIFIC NOTES:**
- (M) MAINTAIN EXISTING MARKINGS
  - (1) FURNISH & INSTALL
  - (2) INPLACE
  - (5) REMOVE
  - (28) REMOVE SIGN PANEL

- GENERAL NOTES:**
- REMOVE ALL EXISTING MARKINGS ON GOLDEN VALLEY RD EXCEPT FOR MARKINGS AS NOTED ON PLANS.

DESIGN TEAM				REVISIONS			
NO.	BY	DATE	DESCRIPTION	NO.	BY	DATE	DESCRIPTION

I hereby certify that this plan 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.

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 Licensed Professional Engineer  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019

PHONE: (651)490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110



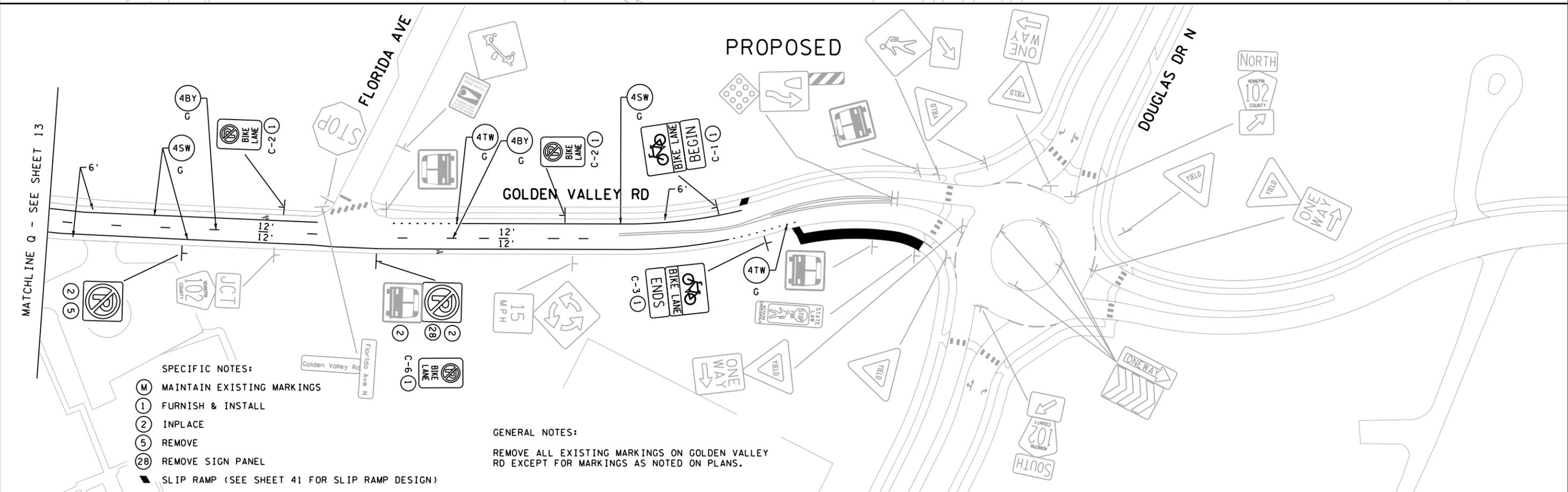
**GOLDEN VALLEY BIKE LANES**

**SIGNING AND STRIPING PLAN**  
 GOLDEN VALLEY ROAD

FILE NO. GOLDV148501  
 SS13 OF SS30  
 13  
 47

FILE: P:\F\J\G\GoldV\148501\5-final-dsgr\51-drawings\90-GIS\Data\DWG\Plansheets\148501\_SS1.dgn  
 MODEL: s514  
 8/1/2019 9:52:38 AM car-vidson

MATCHLINE Q - SEE SHEET 13



- SPECIFIC NOTES:**
- (M) MAINTAIN EXISTING MARKINGS
  - (1) FURNISH & INSTALL
  - (2) INPLACE
  - (5) REMOVE
  - (28) REMOVE SIGN PANEL
  - ▀ SLIP RAMP (SEE SHEET 41 FOR SLIP RAMP DESIGN)
- GENERAL NOTES:**
- REMOVE ALL EXISTING MARKINGS ON GOLDEN VALLEY RD EXCEPT FOR MARKINGS AS NOTED ON PLANS.

DESIGN TEAM				REVISIONS			
DRAWN BY:	JJP			NO.	BY	DATE	
DESIGNER:	JJP						
CHECKED BY:	MEK						

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Certified By: *Michael E. Kotila* Lic. No. 19254  
 Licensed Professional Engineer  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019

**SEH**  
 PHONE: (651)490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110

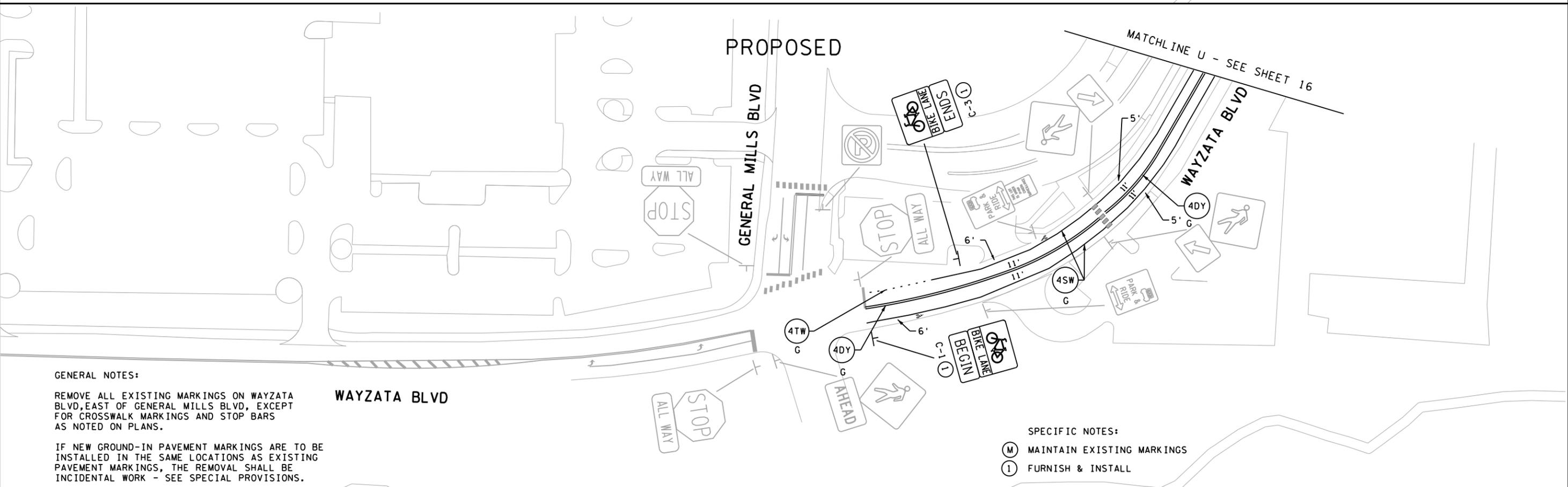
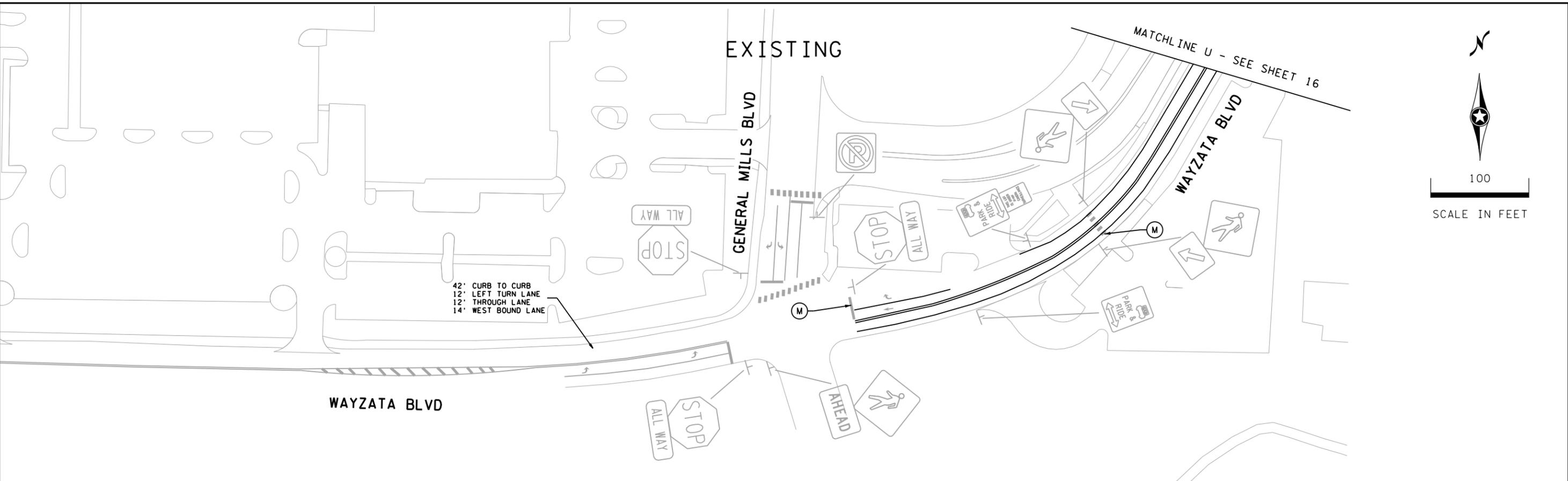


**GOLDEN VALLEY  
 BIKE LANES**

**SIGNING AND STRIPING PLAN**  
 GOLDEN VALLEY ROAD

FILE NO. GOLDV148501  
 SS14 OF SS30  
 14  
 47

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 8/1/2019 9:52:39 AM car-vidson



**GENERAL NOTES:**

REMOVE ALL EXISTING MARKINGS ON WAYZATA BLVD, EAST OF GENERAL MILLS BLVD, EXCEPT FOR CROSSWALK MARKINGS AND STOP BARS AS NOTED ON PLANS.

IF NEW GROUND-IN PAVEMENT MARKINGS ARE TO BE INSTALLED IN THE SAME LOCATIONS AS EXISTING PAVEMENT MARKINGS, THE REMOVAL SHALL BE INCIDENTAL WORK - SEE SPECIAL PROVISIONS.

**SPECIFIC NOTES:**

- (M) MAINTAIN EXISTING MARKINGS
- (I) FURNISH & INSTALL

DESIGN TEAM				REVISIONS			
DRAWN BY:	JJP			NO.	BY	DATE	
DESIGNER:	JJP						
CHECKED BY:	MEK						

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Certified By: *Michael E. Kotila* Lic. No. 19254  
 Licensed Professional Engineer  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019

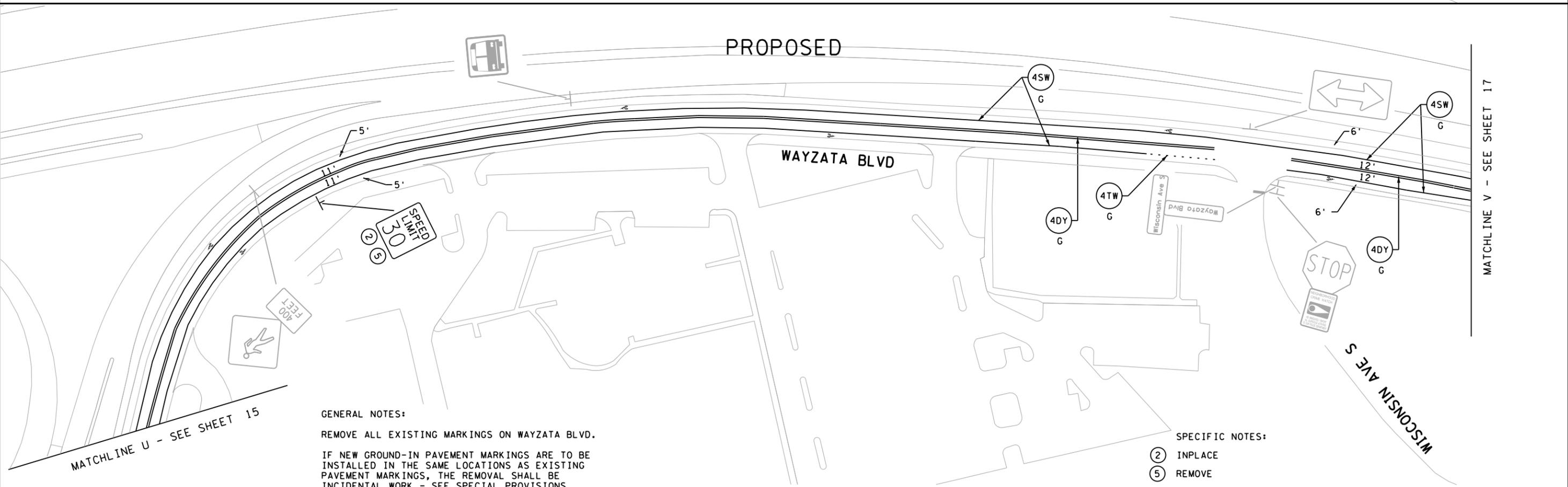
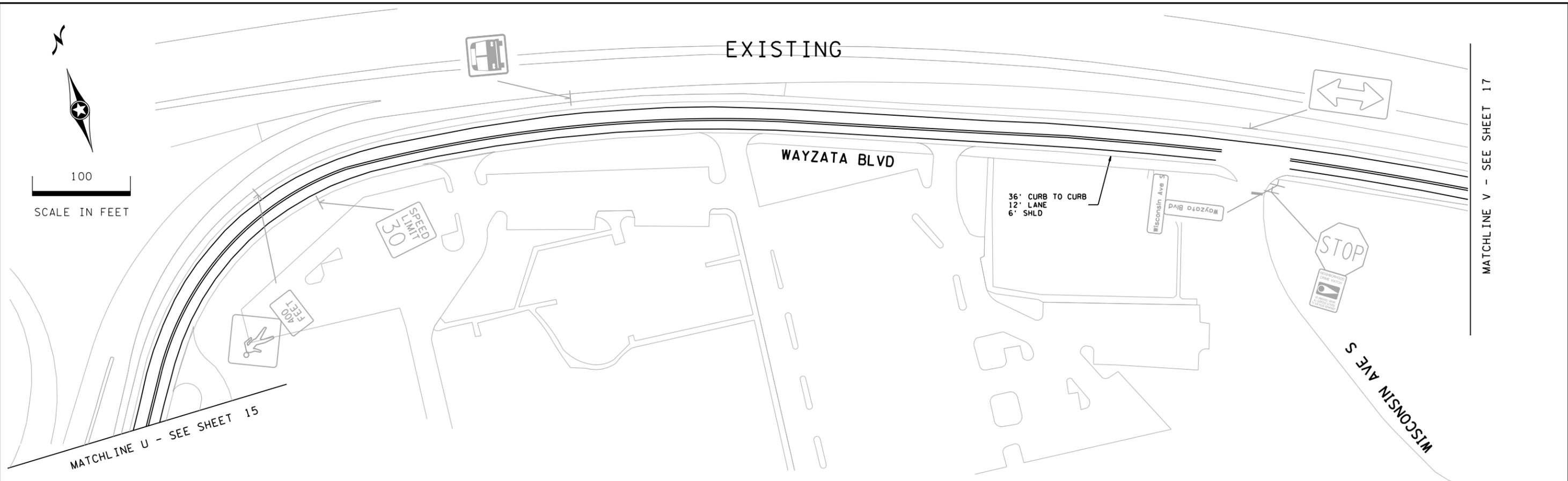
**GOLDEN VALLEY  
BIKE LANES**

**SIGNING AND STRIPING PLAN**

WAYZATA BOULEVARD

FILE NO. GOLDV148501	<b>15</b>
SS15 OF SS30	<b>47</b>

FILE: P:\F\J\G\GoldV\148501\5-final-dsgn\51-drawings\90-GIS\Data\DWG\Plansheets\148501\_SS1.dgn  
 MODEL: s516  
 8/1/2019 9:52:41 AM car-vidson



**GENERAL NOTES:**

REMOVE ALL EXISTING MARKINGS ON WAYZATA BLVD.

IF NEW GROUND-IN PAVEMENT MARKINGS ARE TO BE INSTALLED IN THE SAME LOCATIONS AS EXISTING PAVEMENT MARKINGS, THE REMOVAL SHALL BE INCIDENTAL WORK - SEE SPECIAL PROVISIONS.

**SPECIFIC NOTES:**

② INPLACE

⑤ REMOVE

DESIGN TEAM			
DRAWN BY:	JJP		
DESIGNER:	JJP		
CHECKED BY:	MEK		
NO.	BY	DATE	REVISIONS

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Certified By: *Michael E. Kotila* Lic. No. 19254  
 Licensed Professional Engineer  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019

**SEH**

PHONE: (651)490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110



**GOLDEN VALLEY  
BIKE LANES**

**SIGNING AND STRIPING PLAN**

WAYZATA BOULEVARD

FILE NO. GOLDV148501	16
SS16 OF SS30	47

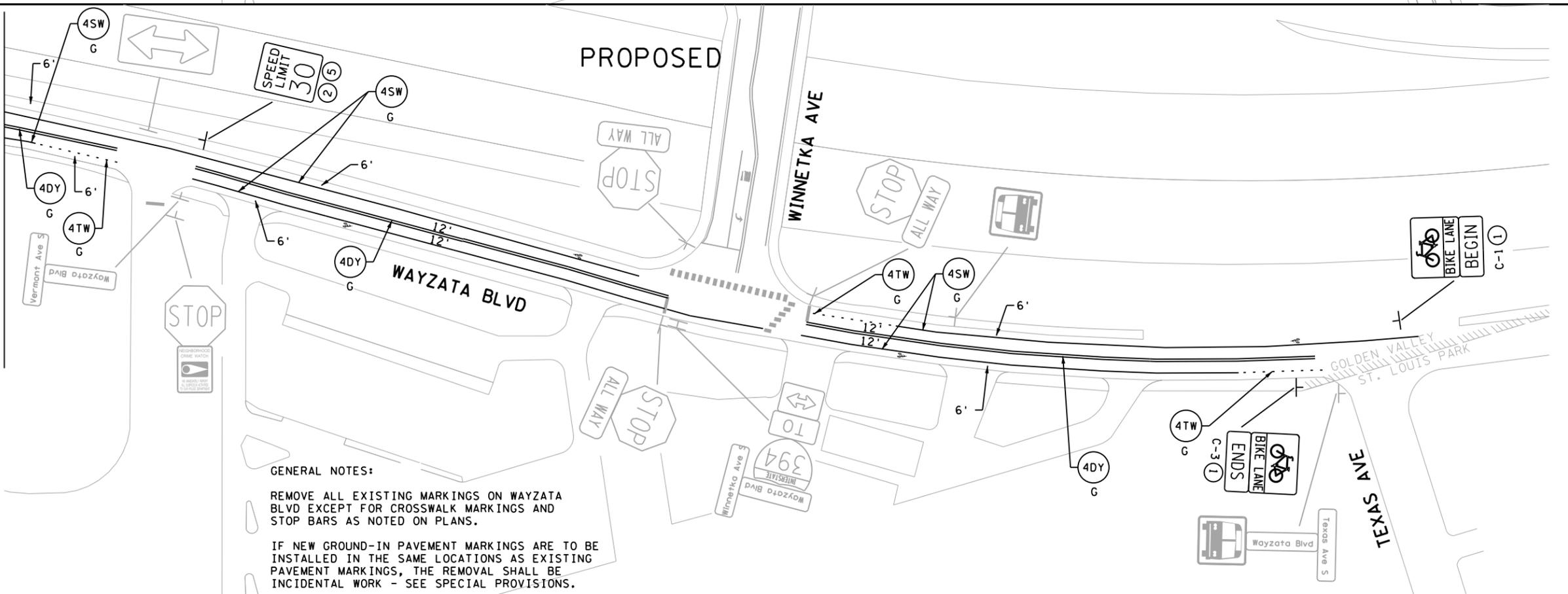
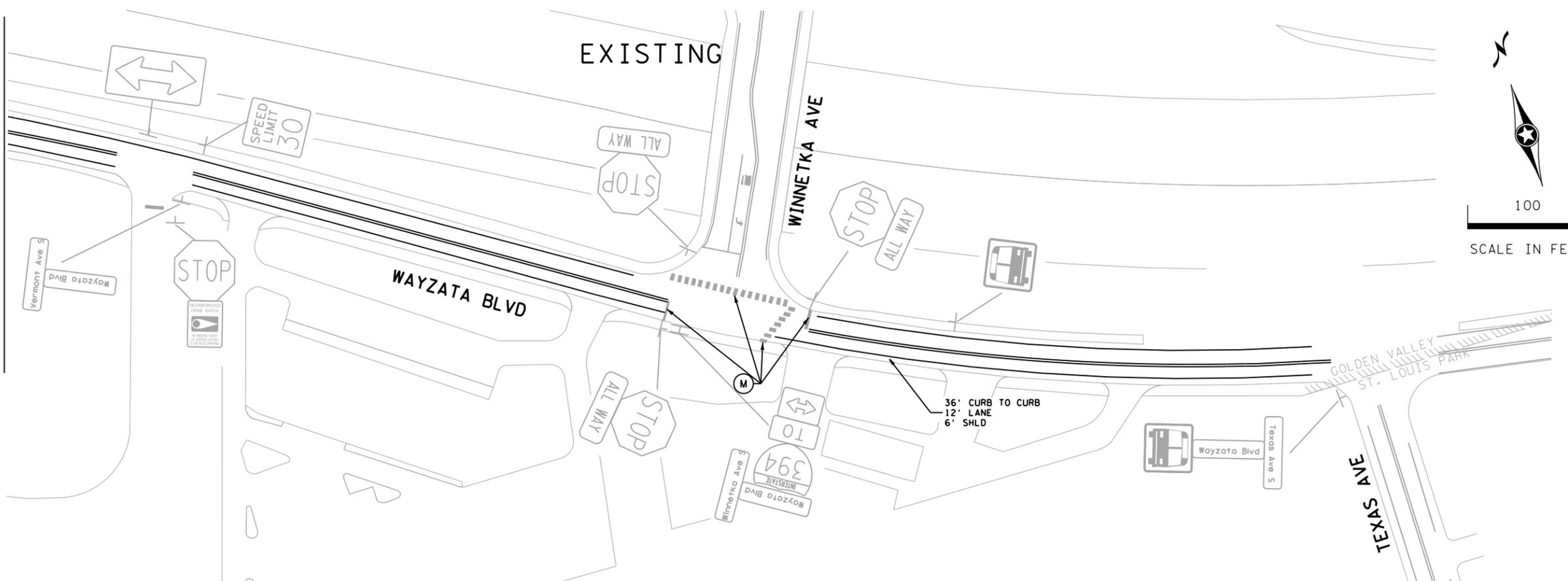
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 8/1/2019 9:52:42 AM car-vidson

MATCHLINE V - SEE SHEET 16

MATCHLINE V - SEE SHEET 16

EXISTING

PROPOSED



36' CURB TO CURB  
 12' LANE  
 6' SHLD

- SPECIFIC NOTES:**
- (M) MAINTAIN EXISTING MARKINGS
  - (1) FURNISH & INSTALL
  - (2) INPLACE
  - (5) REMOVE

**GENERAL NOTES:**

REMOVE ALL EXISTING MARKINGS ON WAYZATA BLVD EXCEPT FOR CROSSWALK MARKINGS AND STOP BARS AS NOTED ON PLANS.

IF NEW GROUND-IN PAVEMENT MARKINGS ARE TO BE INSTALLED IN THE SAME LOCATIONS AS EXISTING PAVEMENT MARKINGS, THE REMOVAL SHALL BE INCIDENTAL WORK - SEE SPECIAL PROVISIONS.

DESIGN TEAM				REVISIONS			
DRAWN BY:	JJP			NO.	BY	DATE	
DESIGNER:	JJP						
CHECKED BY:	MEK						

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 Licensed Professional Engineer  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019

**SEH**  
 PHONE: (651)490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110

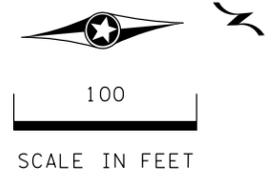


**GOLDEN VALLEY  
 BIKE LANES**

**SIGNING AND STRIPING PLAN**  
 WAYZATA BOULEVARD

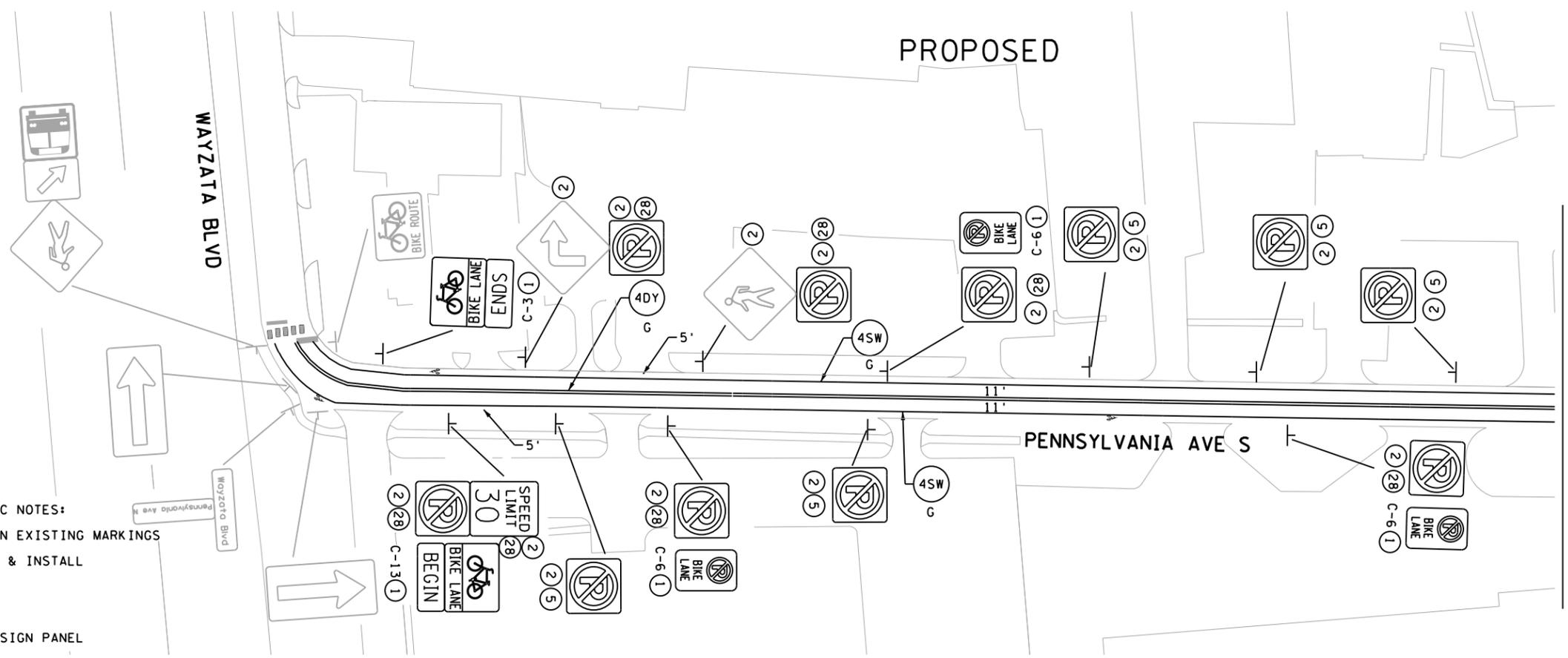
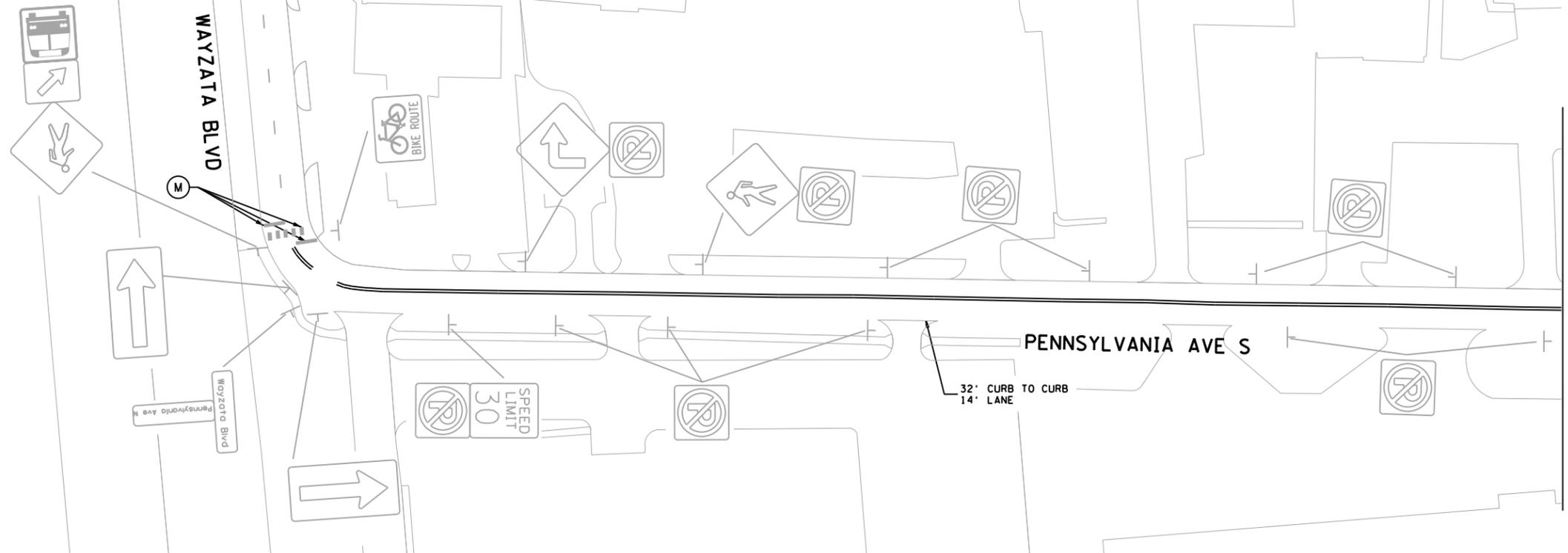
FILE NO. GOLDV148501	17
SS17 OF SS30	47

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 MODEL: s518  
 8/1/2019 9:52:43 AM carvidson



EXISTING

PROPOSED



MATCHLINE X - SEE SHEET 19

MATCHLINE X - SEE SHEET 19

- SPECIFIC NOTES:**
- (M) MAINTAIN EXISTING MARKINGS
  - (1) FURNISH & INSTALL
  - (2) INPLACE
  - (5) REMOVE
  - (28) REMOVE SIGN PANEL

- GENERAL NOTES:**
- REMOVE ALL EXISTING MARKINGS ON PENNSYLVANIA AVE S. EXCEPT FOR CROSSWALK MARKINGS AND STOP BARS AS NOTED ON PLANS.
  - IF NEW GROUND-IN PAVEMENT MARKINGS ARE TO BE INSTALLED IN THE SAME LOCATIONS AS EXISTING PAVEMENT MARKINGS, THE REMOVAL SHALL BE INCIDENTAL WORK - SEE SPECIAL PROVISIONS.

DESIGN TEAM			
DRAWN BY:	JJP		
DESIGNER:	JJP		
CHECKED BY:	MEK		
NO.	BY	DATE	REVISIONS

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 Licensed Professional Engineer  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019

**SEH**  
 PHONE: (651)490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110

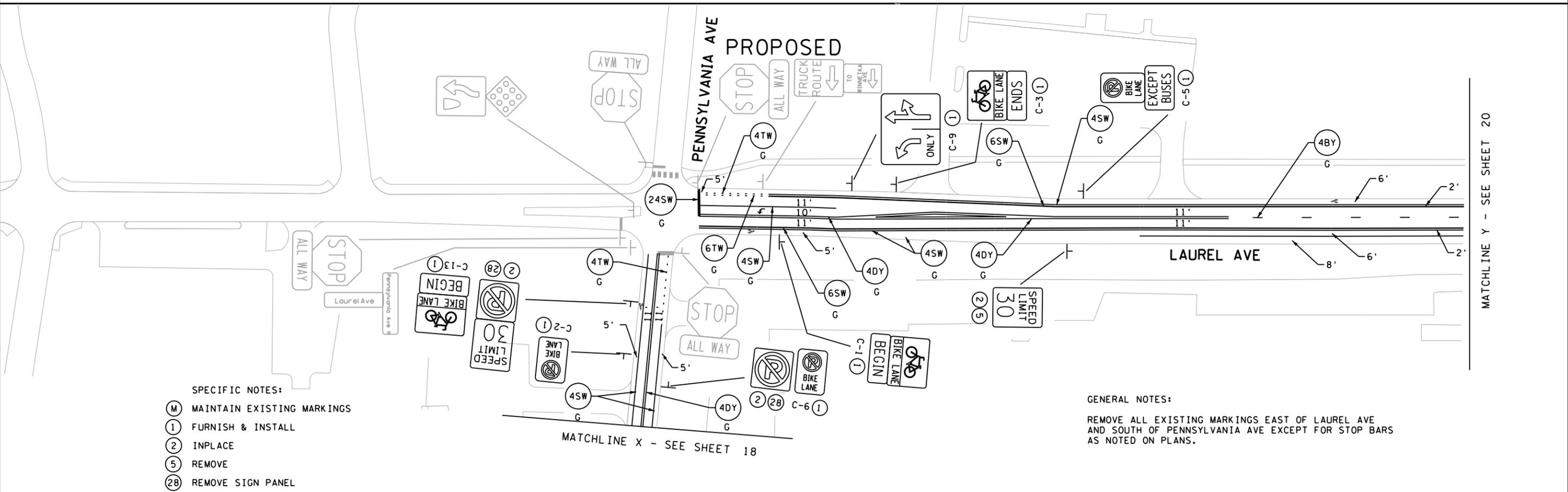
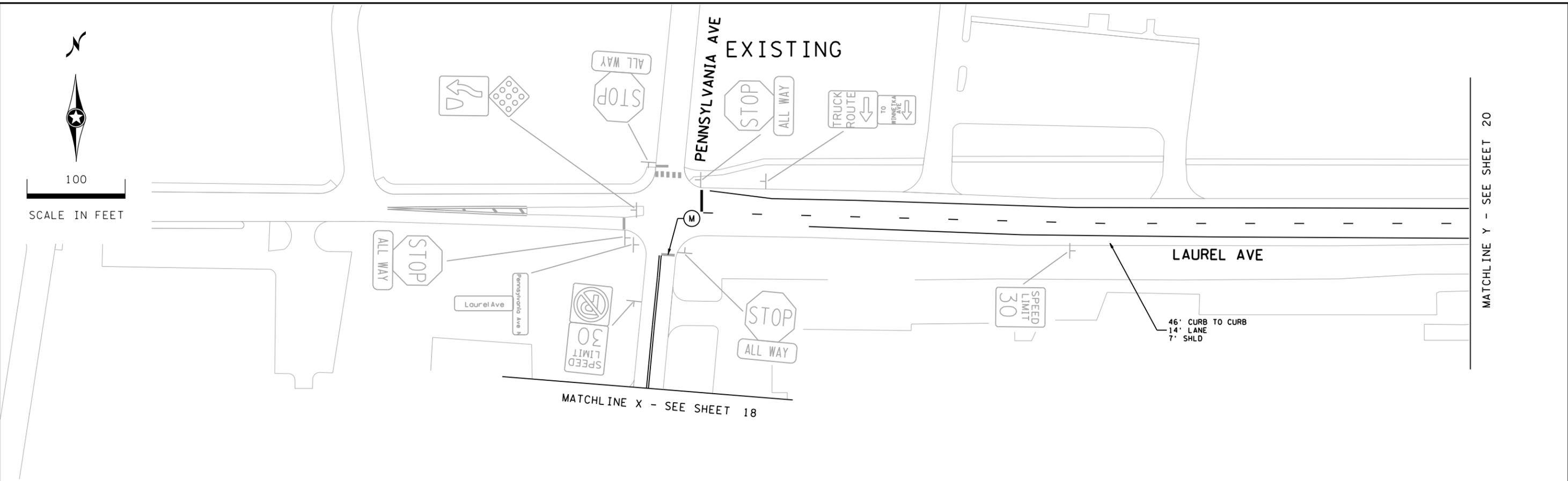


**GOLDEN VALLEY BIKE LANES**

**SIGNING AND STRIPING PLAN**  
 PENNSYLVANIA AVENUE

FILE NO. GOLDV148501	18
SS18 OF SS30	47

FILE: P:\F\J\G\GoldV\148501\5-final-dsgn\51-drawings\90-GIS\Data\DWG\Plansheets\148501\_SS1.dgn  
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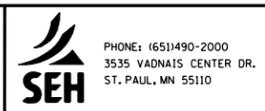


- SPECIFIC NOTES:**
- (M) MAINTAIN EXISTING MARKINGS
  - (1) FURNISH & INSTALL
  - (2) INPLACE
  - (5) REMOVE
  - (28) REMOVE SIGN PANEL

**GENERAL NOTES:**  
 REMOVE ALL EXISTING MARKINGS EAST OF LAUREL AVE AND SOUTH OF PENNSYLVANIA AVE EXCEPT FOR STOP BARS AS NOTED ON PLANS.

DESIGN TEAM			
DRAWN BY:	JJP		
DESIGNER:	JJP		
CHECKED BY:	MEK		
NO.	BY	DATE	REVISIONS

I hereby certify that this plan 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.  
 Certified By: *Michael E. Kotila* Lic. No. 19254  
 Licensed Professional Engineer  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019



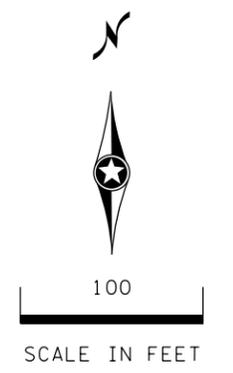
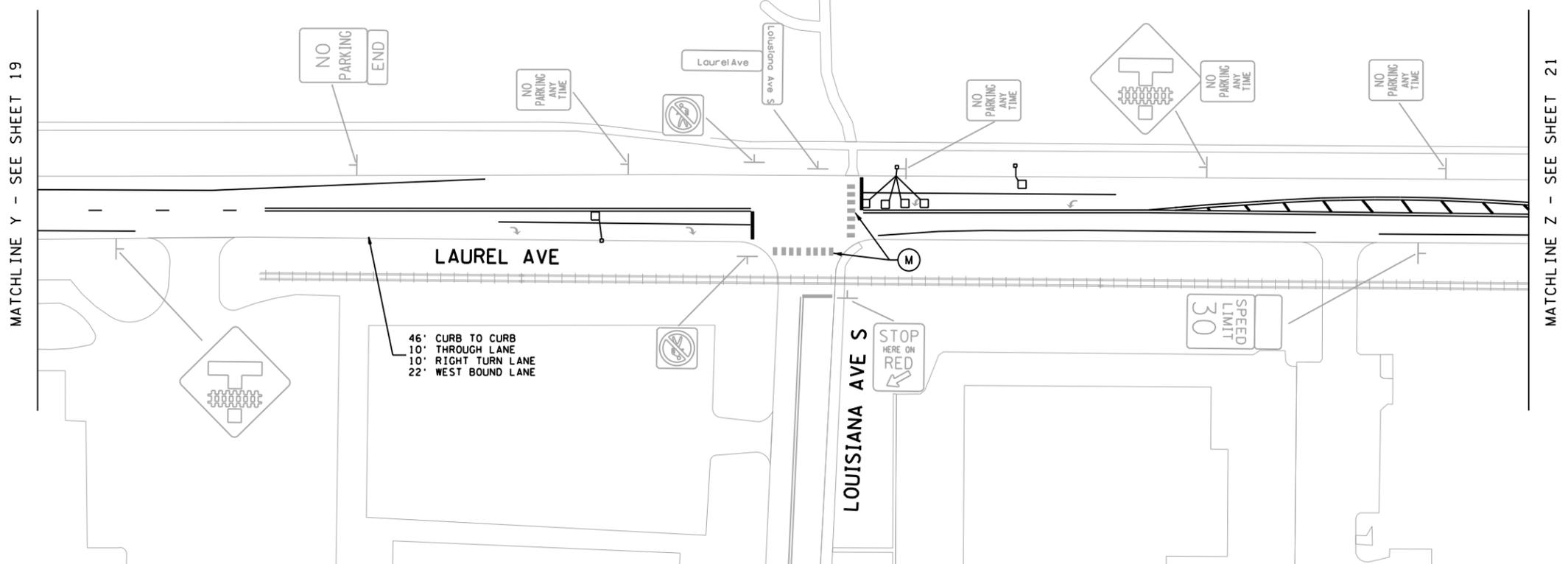
**GOLDEN VALLEY BIKE LANES**

**SIGNING AND STRIPING PLAN**  
 LAUREL AVENUE

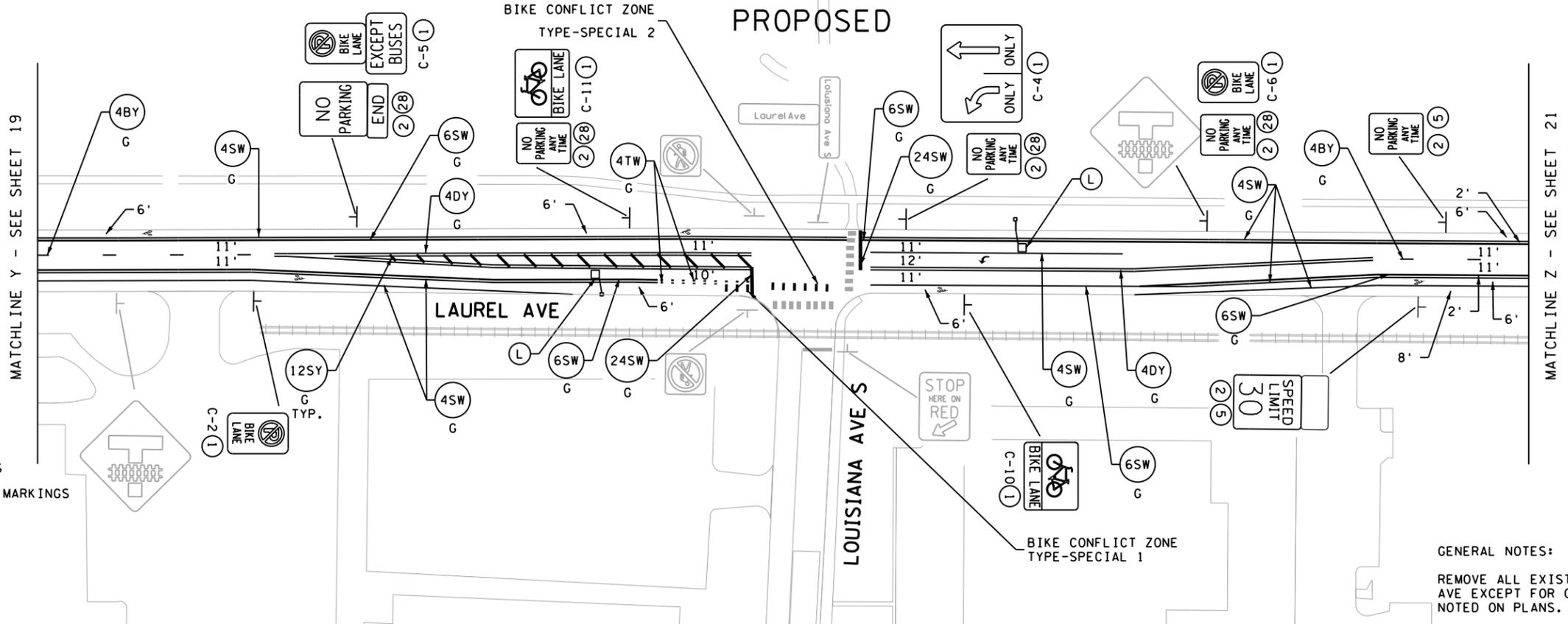
FILE NO.	19
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SS19	47
OF SS30	

9:52:45 AM  
8/1/2019  
car-vidson  
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MODEL1.ssd

EXISTING



PROPOSED



- SPECIFIC NOTES:**
- (L) F&I LOOP DETECTORS
  - (M) MAINTAIN EXISTING MARKINGS
  - (1) FURNISH & INSTALL
  - (2) INPLACE
  - (5) REMOVE
  - (28) REMOVE SIGN PANEL

**GENERAL NOTES:**  
REMOVE ALL EXISTING MARKINGS ON LAUREL AVE EXCEPT FOR CROSSWALK MARKINGS AS NOTED ON PLANS.

DESIGN TEAM			
DRAWN BY:	JJP		
DESIGNER:	JJP		
CHECKED BY:	MEK		
NO.	BY	DATE	REVISIONS

I hereby certify that this plan 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.  
Certified By: *Michael E. Kotila* Lic. No. 19254  
Printed Name: MICHAEL E. KOTILA Date: 8/1/2019

PHONE: (651)490-2000  
3535 VADNAIS CENTER DR.  
ST. PAUL, MN 55110



**GOLDEN VALLEY BIKE LANES**

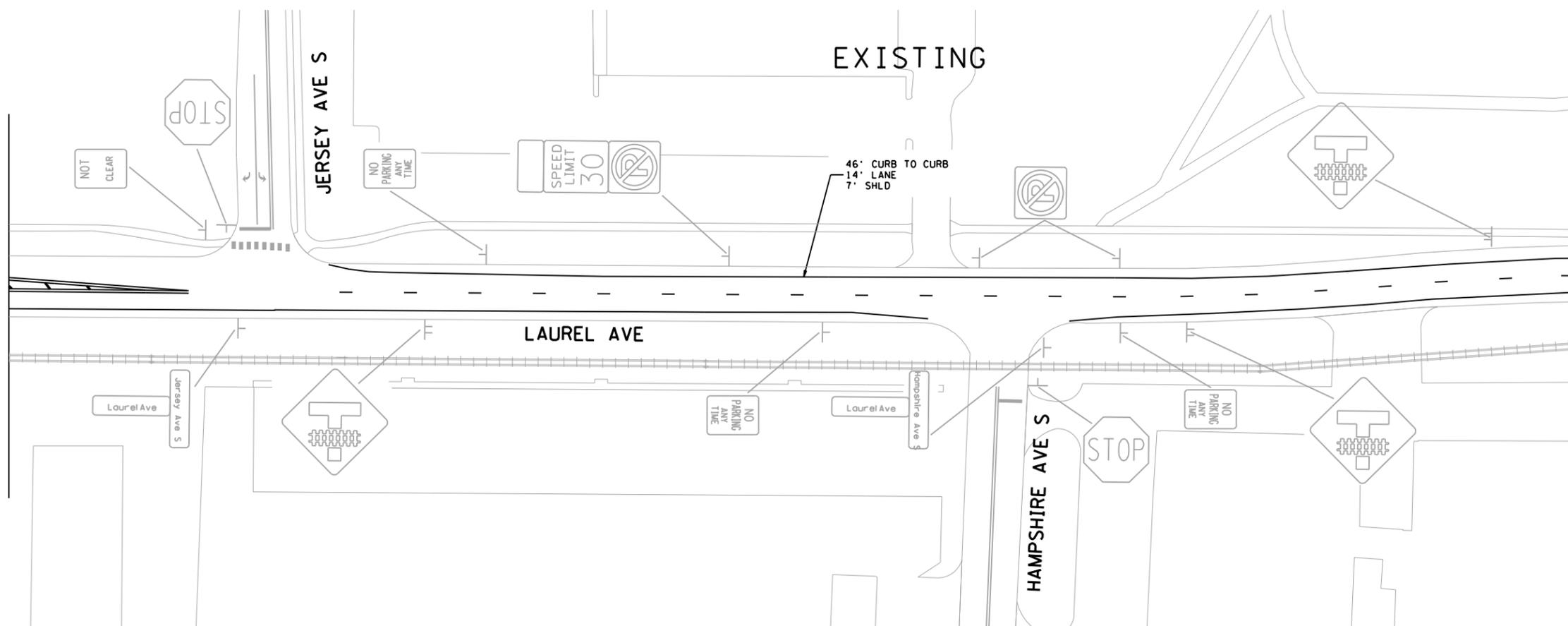
**SIGNING AND STRIPING PLAN**  
LAUREL AVENUE

FILE NO. GOLDV148501	20
SS20 OF SS30	47

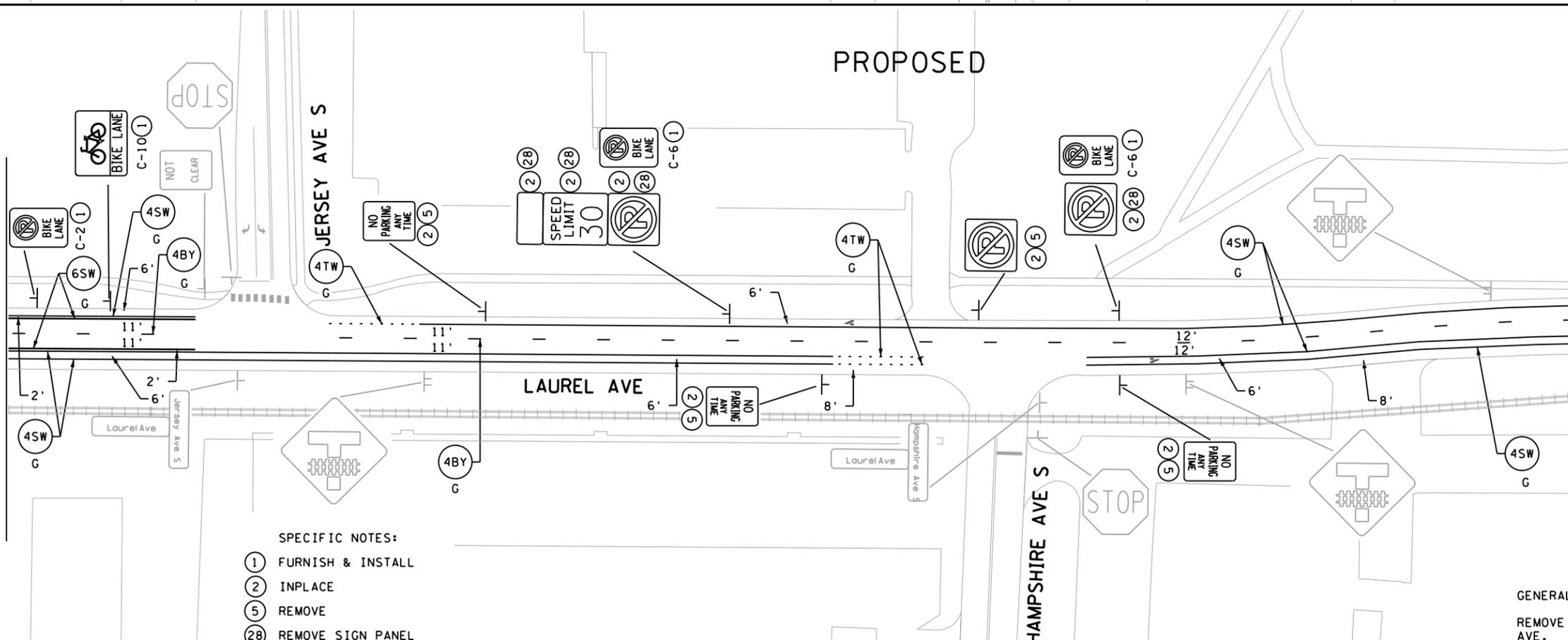
MATCHLINE Z - SEE SHEET 20

MATCHLINE AA - SEE SHEET 22

### EXISTING



### PROPOSED



#### SPECIFIC NOTES:

- ① FURNISH & INSTALL
- ② INPLACE
- ⑤ REMOVE
- ②⑧ REMOVE SIGN PANEL

#### GENERAL NOTES:

REMOVE ALL EXISTING MARKINGS ON LAUREL AVE.



DESIGN TEAM			
DRAWN BY:	JJP		
DESIGNER:	JJP		
CHECKED BY:	MEK		
NO.	BY	DATE	REVISIONS

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 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019

**SEH**  
 PHONE: (651)490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110

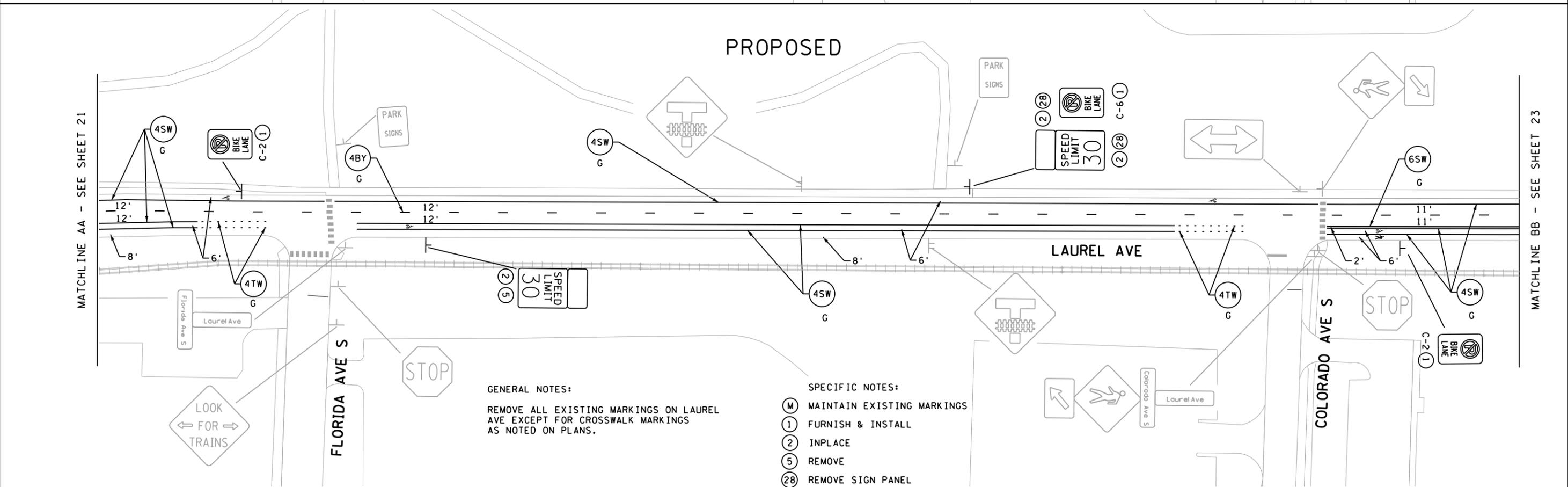
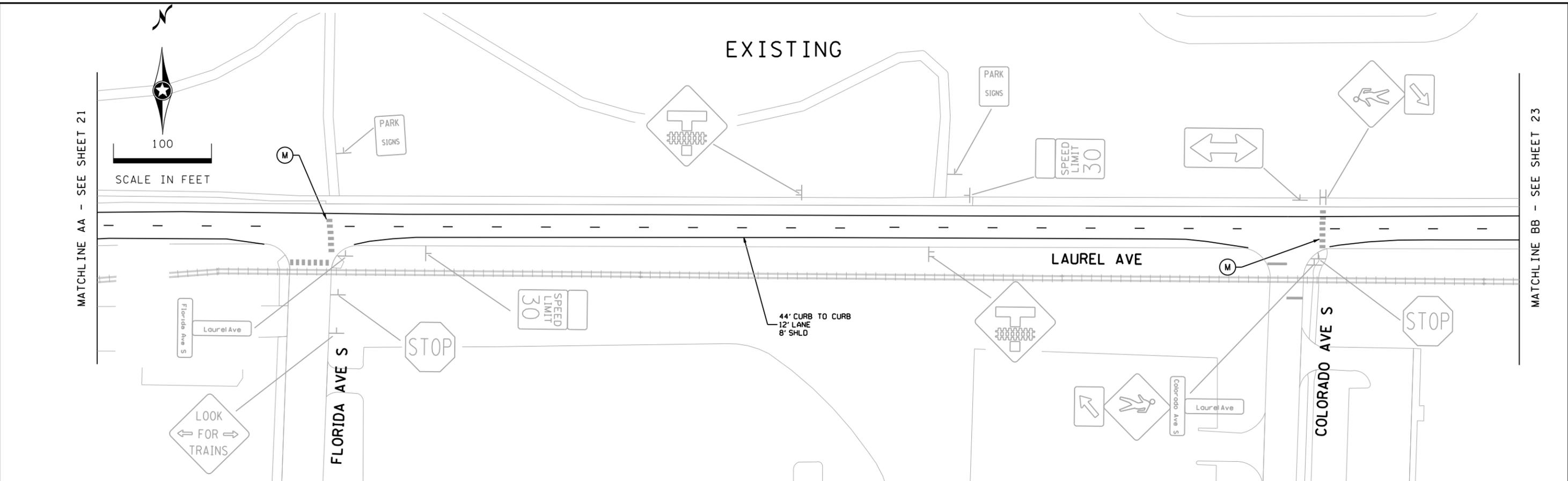


**GOLDEN VALLEY  
 BIKE LANES**

**SIGNING AND STRIPING PLAN**  
 LAUREL AVENUE

FILE NO. GOLDV148501	21
SS21 OF SS30	47

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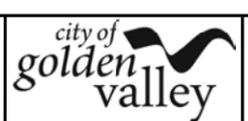


DESIGN TEAM			
DRAWN BY:	JJP		
DESIGNER:	JJP		
CHECKED BY:	MEK		
NO.	BY	DATE	REVISIONS

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**SEH**  
 PHONE: (651)490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110

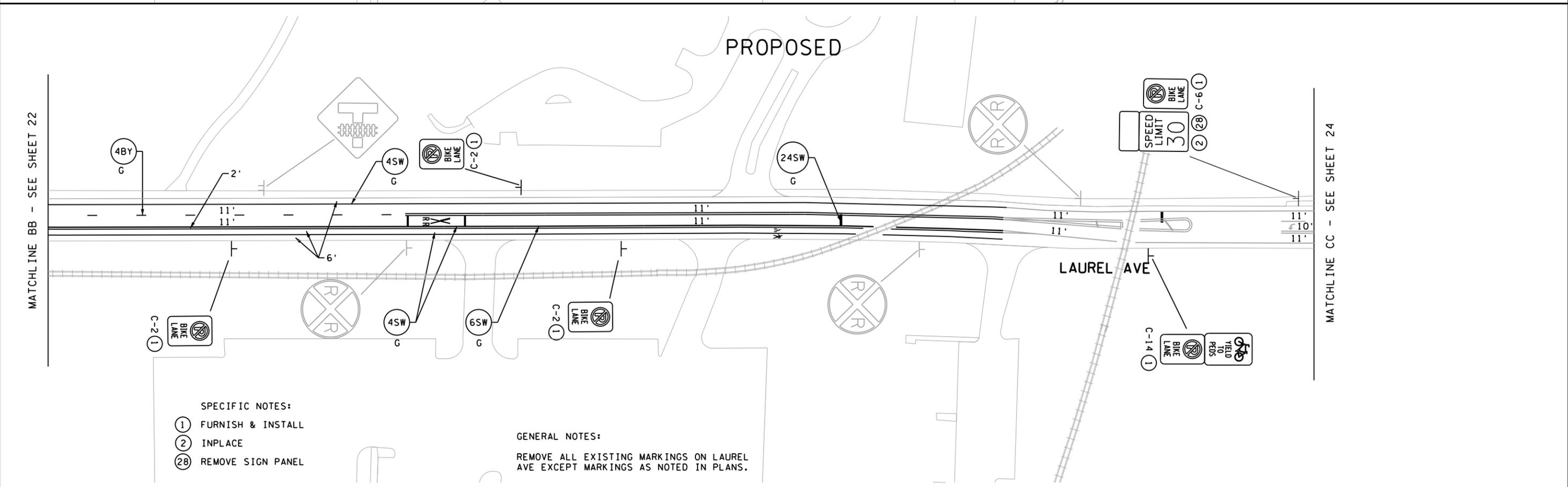
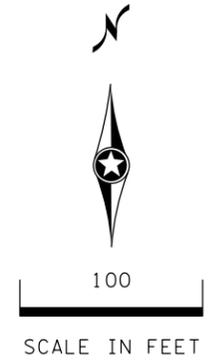
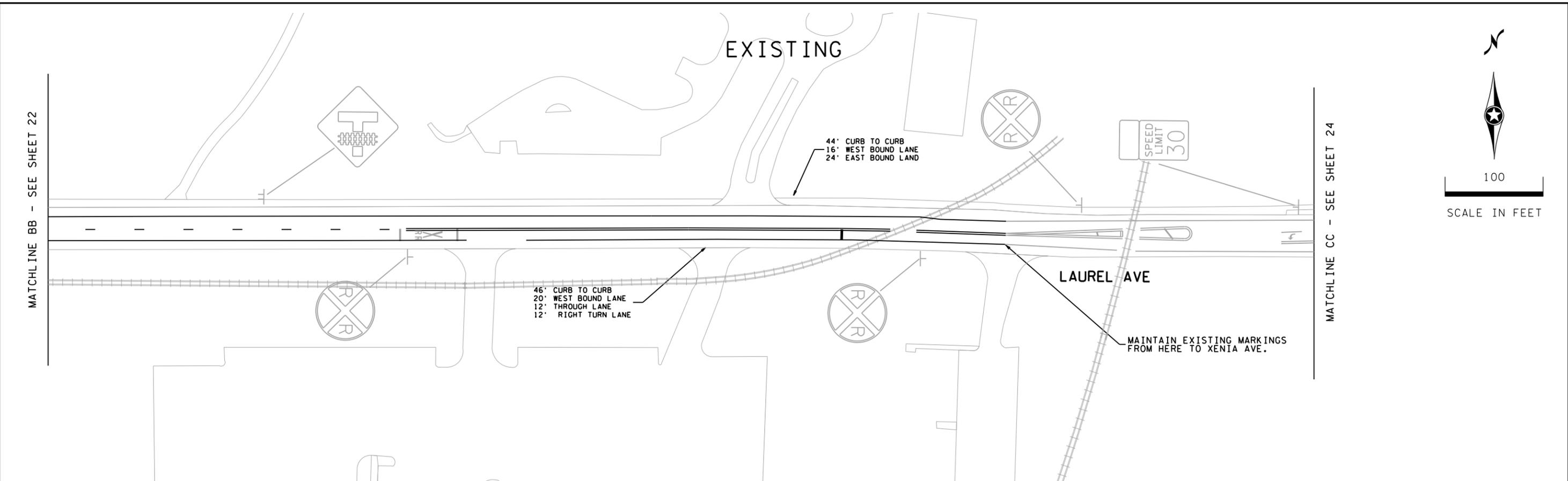


**GOLDEN VALLEY BIKE LANES**

**SIGNING AND STRIPING PLAN**  
 LAUREL AVENUE

FILE NO. GOLDV148501	22
SS22 OF SS30	47

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- SPECIFIC NOTES:**
- ① FURNISH & INSTALL
  - ② INPLACE
  - ②B REMOVE SIGN PANEL

**GENERAL NOTES:**  
 REMOVE ALL EXISTING MARKINGS ON LAUREL AVE EXCEPT MARKINGS AS NOTED IN PLANS.

DESIGN TEAM		NO.	BY	DATE	REVISIONS
DRAWN BY:	JJP				
DESIGNER:	JJP				
CHECKED BY:	MEK				

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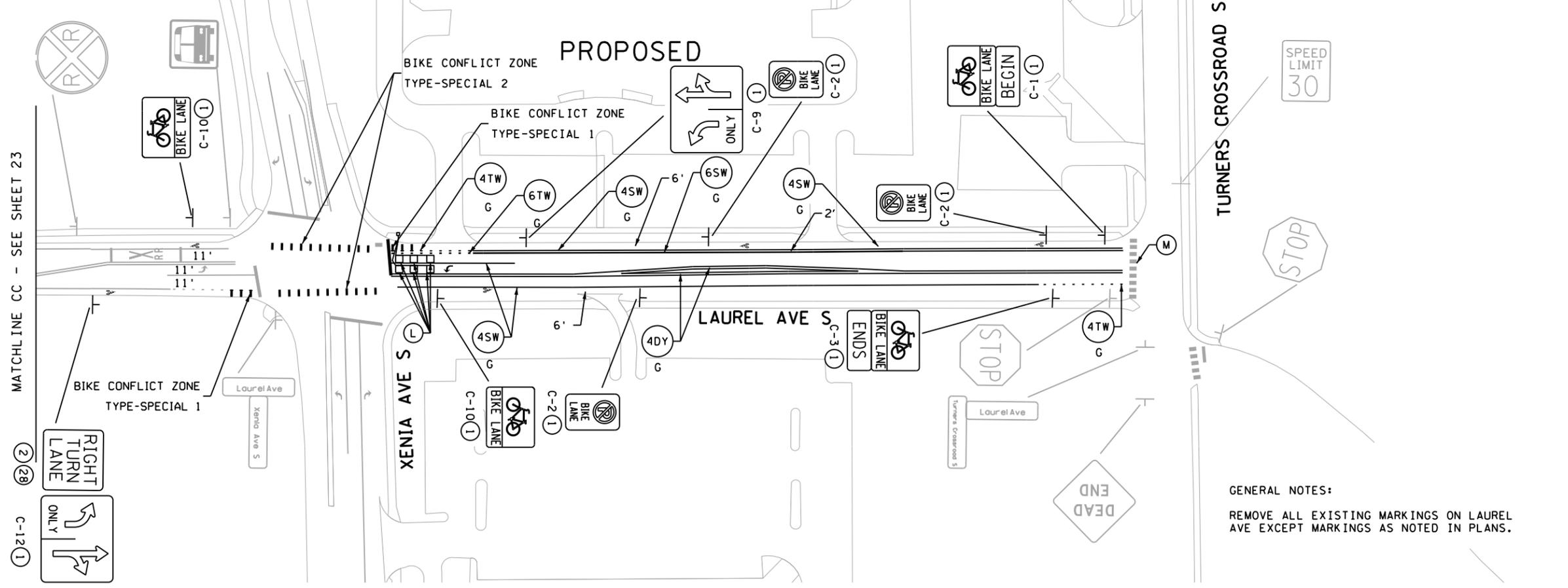
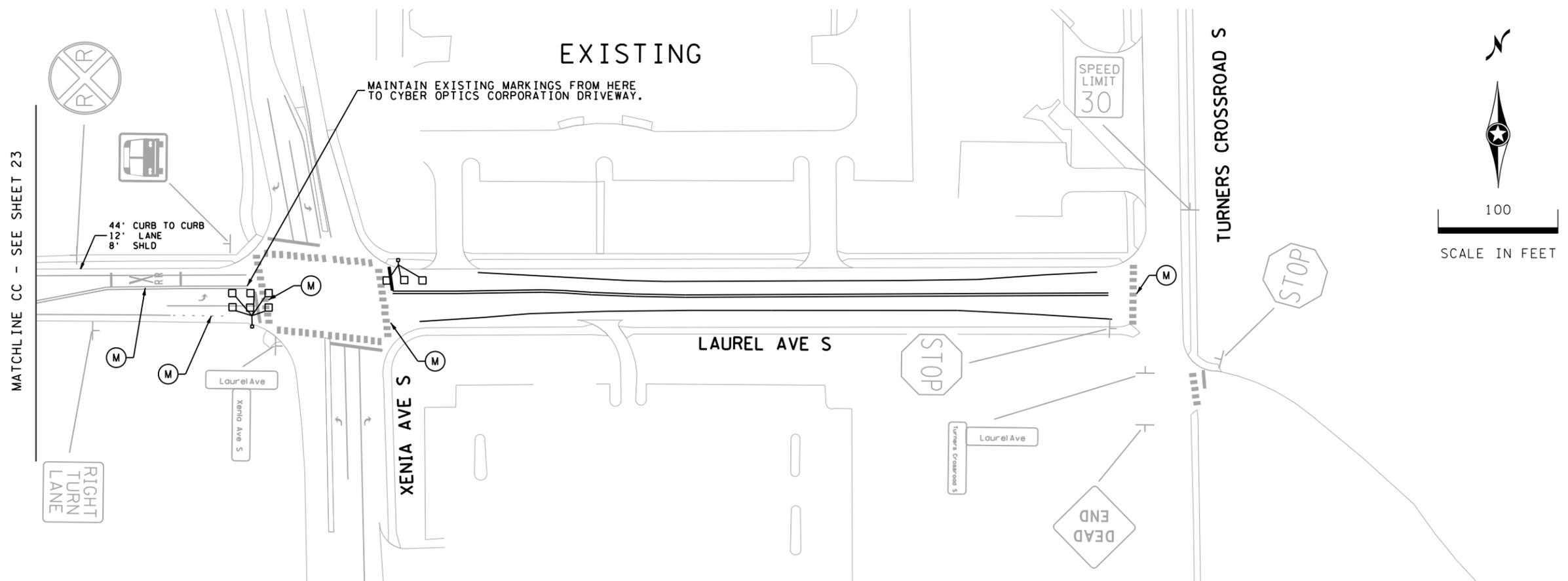
**SEH**  
 PHONE: (651)490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110



**GOLDEN VALLEY BIKE LANES**

**SIGNING AND STRIPING PLAN**  
 LAUREL AVENUE

FILE NO. **23**  
 GOLDV148501  
 SS23  
 OF SS30



- SPECIFIC NOTES:**
- (L) F&I LOOP DETECTORS
  - (M) MAINTAIN EXISTING MARKINGS
  - (1) FURNISH & INSTALL
  - (2) INPLACE
  - (28) REMOVE SIGN PANEL

**GENERAL NOTES:**  
REMOVE ALL EXISTING MARKINGS ON LAUREL AVE EXCEPT MARKINGS AS NOTED IN PLANS.

DESIGN TEAM			
DRAWN BY:	JJP		
DESIGNER:	JJP		
CHECKED BY:	MEK		
NO.	BY	DATE	REVISIONS

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 Licensed Professional Engineer  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019

PHONE: (651)490-2000  
3535 VADNAIS CENTER DR.  
ST. PAUL, MN 55110

city of golden valley

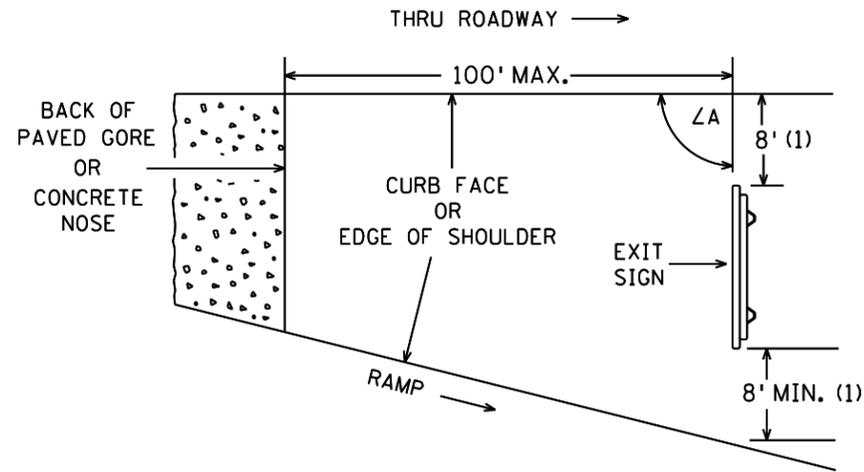
GOLDEN VALLEY BIKE LANES

SIGNING AND STRIPING PLAN  
LAUREL AVENUE

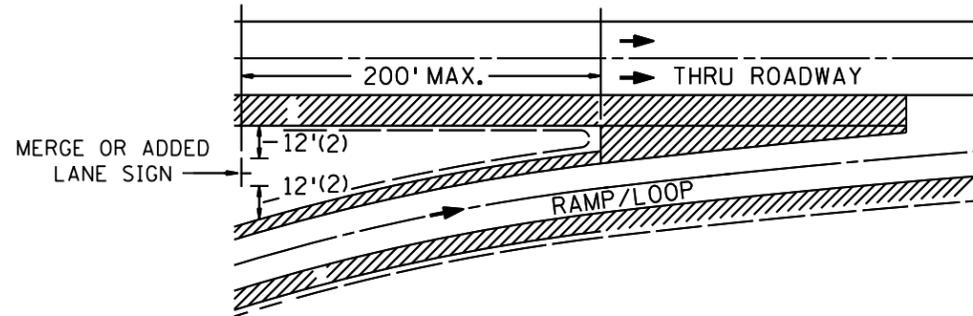
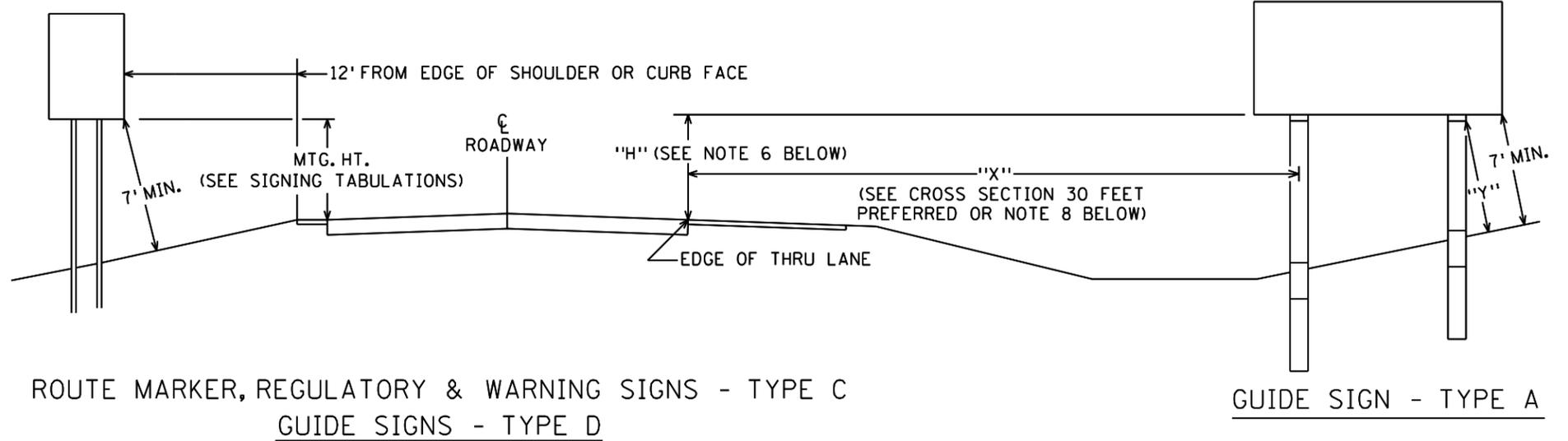
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SS24 OF SS30	47

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**GORE PLACEMENT**



**ROADSIDE PLACEMENT**



**SPECIFIC NOTES:**

- (1) EXIT SIGN  
 IF THESE OFFSETS CANNOT BE ATTAINED WITHIN 100 FEET OF THE PAVED GORE, A 4 FOOT OFFSET IS ACCEPTABLE. IF THE 4 FOOT OFFSETS CANNOT BE ATTAINED WITHIN 100 FEET OF THE PAVED GORE, CONTACT THE PROJECT ENGINEER.
- (2) MERGE OR ADDED LANE SIGN  
 IF THESE OFFSETS CANNOT BE ATTAINED WITHIN 200 FEET OF THE PAVED GORE, A 4 FOOT OFFSET IS ACCEPTABLE. IF THE 4 FOOT OFFSETS CANNOT BE ATTAINED WITHIN 200 FEET OF THE PAVED GORE, CONTACT THE PROJECT ENGINEER.

**NOTES:**

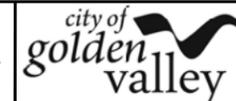
1. ALL TYPE C AND D MOUNTING HEIGHTS ARE MEASURED VERTICALLY FROM THE BOTTOM OF THE SIGN TO THE ELEVATION OF THE NEAR EDGE OF PAVEMENT IN RURAL AREAS OR TO THE TOP OF THE CURB OR IN THE ABSCENCE OF CURB, TO THE NEAR EDGE OF THE TRAVELED WAY.
2. SIGN FACES SHALL BE VERTICAL.
3. OVERHEAD SIGNS SHALL BE POSITIONED AT RIGHT ANGLES TO THE THRU ROADWAY UNLESS OTHERWISE NOTED.
4. TO AVOID SPECULAR GLARE,  $\angle A$  SHALL BE APPROXIMATELY  $93^\circ$  FOR SIGNS LOCATED LESS THAN 30' FROM THE EDGE OF THRU LANE AND APPROXIMATELY  $92^\circ$  FOR SIGNS LOCATED 30' OR MORE FROM EDGE OF THRU LANE. THIS APPLIES TO SIGNS TYPE A, C, & D AND INCLUDES SIGNS IN THE GORE.
5. "Y" IS THE PERPENDICULAR DISTANCE FROM THE GROUND LINE TO THE FRICTION FUSE ON THE POST. THIS DISTANCE SHALL BE AT LEAST 7'.
6. WHERE "X" IS LESS THAN 30', "H" SHALL BE 7'. WHERE "X" IS 30' OR GREATER, MINIMUM AND PREFERRED "H" IS 5'.
7. LATERAL CLEARANCES GIVEN APPLY TO RIGHT AND OR LEFT SIDE INSTALLATION.
8. WHEN A TYPE A SIGN IS INSTALLED DIRECTLY BEHIND TRAFFIC BARRIER, THE LEFT EDGE OF THE SIGN PANEL SHALL BE LOCATED A MINIMUM OF 8 FEET BEHIND THE FACE OF THE TRAFFIC BARRIER.

REVISED: 4-28-17

**SIGN PLACEMENT**

DESIGN TEAM			
DRAWN BY:	JJP		
DESIGNER:	JJP		
CHECKED BY:	MEK		
NO.	BY	DATE	REVISIONS

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 Certified By: *Michael E. Kotila* Lic. No. 19254  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019



**GOLDEN VALLEY BIKE LANES**

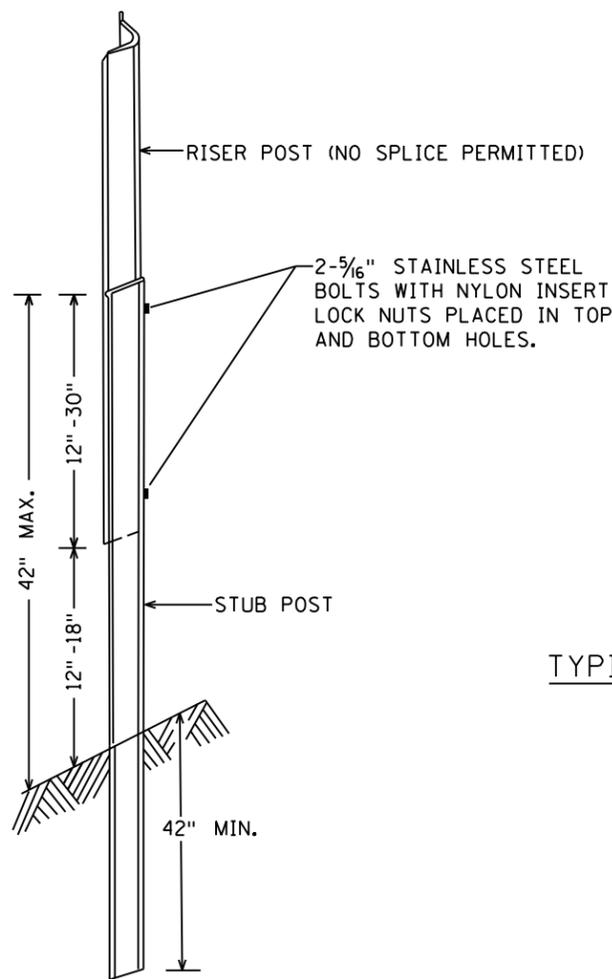
**SIGNING AND STRIPING PLAN**

DETAILS

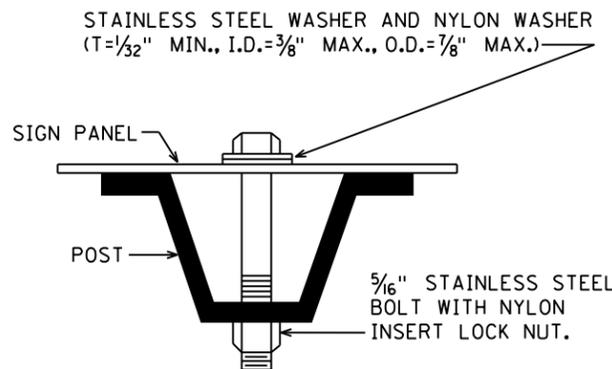
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SS25	47
OF SS30	

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 8/1/2019  
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**TYPE C & D POST**

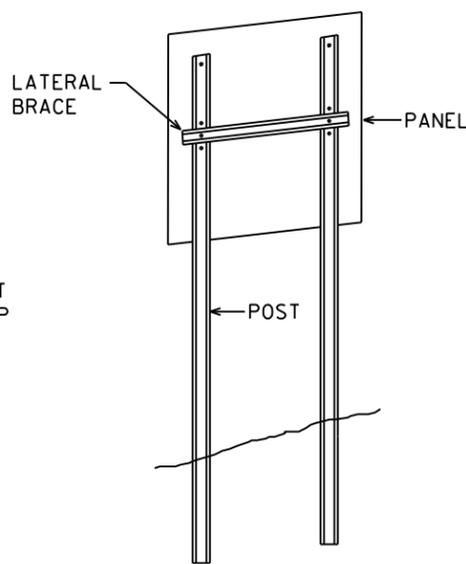


**U POST BREAKAWAY SPLICE**

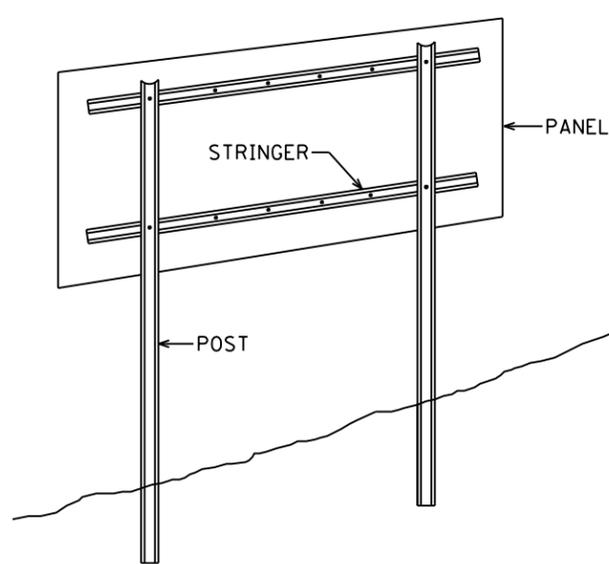


**U POST MOUNTING  
TYPE C SIGNS**

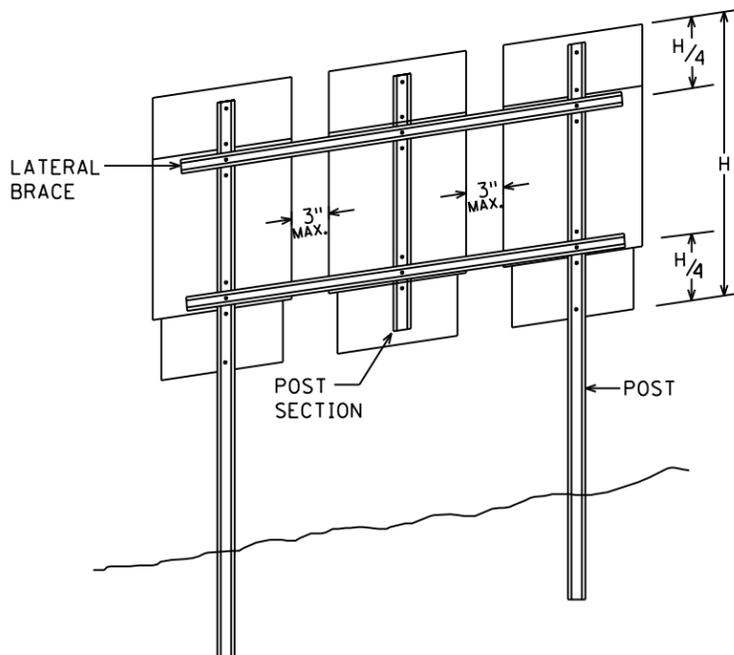
REVISED: 5-5-2017



**TYPICAL TYPE C INSTALLATION**



**TYPICAL TYPE D INSTALLATION**



**MODIFIED TYPE C INSTALLATION**

**NOTES:**

1. USE 3 LB/FT STUB POSTS. SHALL CONFORM TO MNDOT 3401.
2. USE 2.5 LB/FT RISER POSTS, STRINGERS, KNEE BRACES AND LATERAL BRACES. ALL SHALL CONFORM TO MNDOT 3401.
3. SEE SIGN DATA SHEETS FOR NUMBER OF POSTS, KNEE BRACES, POST LENGTHS AND SPACINGS, AS DETERMINED FROM TEM CHARTS 6.3 AND 6.4.
4. IF MORE THAN TWO POSTS ARE NEEDED, THE MINIMUM SPACING SHALL BE 45" BETWEEN POSTS.
5. TYPE D SIGN PANELS SHALL BE BOLTED TO STRINGERS AT 24" MAXIMUM INTERVALS IN ACCORDANCE WITH THE TYPE D STRINGER AND PANEL-JOINT DETAIL (SEE MNDOT STANDARD SIGNS AND MARKINGS MANUAL).
6. MOUNTING (PUNCH CODE) FOR TYPE C SIGN PANELS SHALL BE AS INDICATED IN THE MNDOT STANDARD SIGNS AND MARKINGS MANUAL UNLESS OTHERWISE SPECIFIED.
7. ALL RISER (VERTICAL) U POSTS SHALL BE SPLICED. DRIVEN STUB POSTS SHALL BE AT LEAST 7' LONG.
8. USE STAINLESS STEEL 5/16" BOLTS, WASHERS AND NYLON INSERT LOCK NUTS AS SHOWN FOR ALL GROUND MOUNTED AND OVERHEAD MOUNTED SIGNS.
9. STAINLESS STEEL WASHER WITH SAME DIMENSIONS SHALL BE PROVIDED BETWEEN ALL NYLON WASHERS AND BOLT HEADS.
10. BRACING STUBS SHALL BE NO MORE THAN 4" ABOVE GROUND AND EMBEDDED AT LEAST 42".
11. A-FRAME BRACKET SHALL BE STEEL CONFORMING TO MNDOT 3306 AND GALVANIZED IN ACCORDANCE WITH MNDOT 3394.
12. COLLARS SHALL BE USED TO SHIM OVERLAYS AND LEGEND COMPONENTS AWAY FROM PANEL WHERE INTERFERENCE WITH BOLT HEADS IS ENCOUNTERED. MNDOT 3352.2A6.
13. 2 POST TYPE C SIGNS SHALL BE REINFORCED WITH AT LEAST ONE LATERAL BRACE. INSTALLATIONS WHERE THE TOTAL PANEL HEIGHT IS 60" OR MORE SHALL HAVE TWO LATERAL BRACES LOCATED APPROXIMATELY AT THE QUARTER POINTS.
14. WHERE 2 SINGLE POST TYPE C SIGNS ARE INSTALLED SIDE BY SIDE, THEY SHALL BE REINFORCED Laterally BY AT LEAST 2 BRACES, BOLTED AT EACH POST AND LOCATED APPROXIMATELY AT THE QUARTER POINTS.
15. WHERE 3 OR MORE TYPE C SIGNS ARE INSTALLED SIDE BY SIDE, THEY SHALL BE REINFORCED Laterally BY AT LEAST 2 BRACES, BOLTED AT EACH POST AND POST SECTION AND LOCATED APPROXIMATELY AT THE QUARTER POINTS AS SHOWN IN MODIFIED TYPE C INSTALLATION.

**TYPE C & D SIGN  
STRUCTURAL DETAILS**

Sheet 1 of 2

DESIGN TEAM			
DRAWN BY:	JJP		
DESIGNER:	JJP		
CHECKED BY:	MEK		
NO.	BY	DATE	REVISIONS

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 ST. PAUL, MN 55110

city of golden valley

**GOLDEN VALLEY  
BIKE LANES**

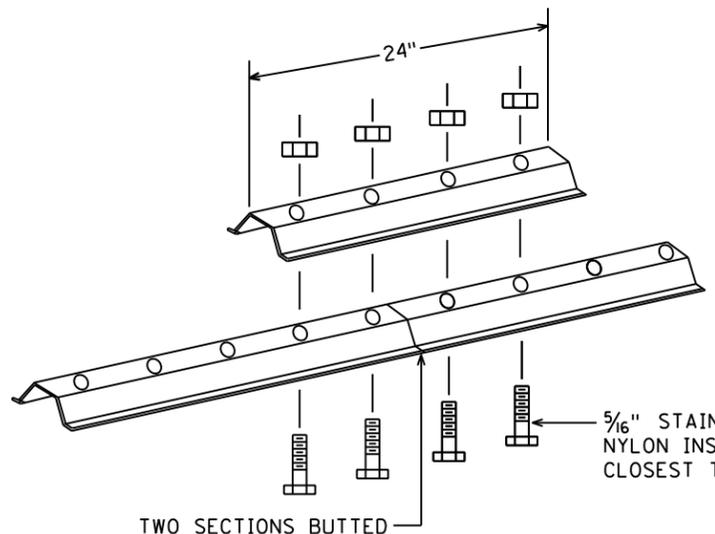
**SIGNING AND STRIPING PLAN**

DETAILS

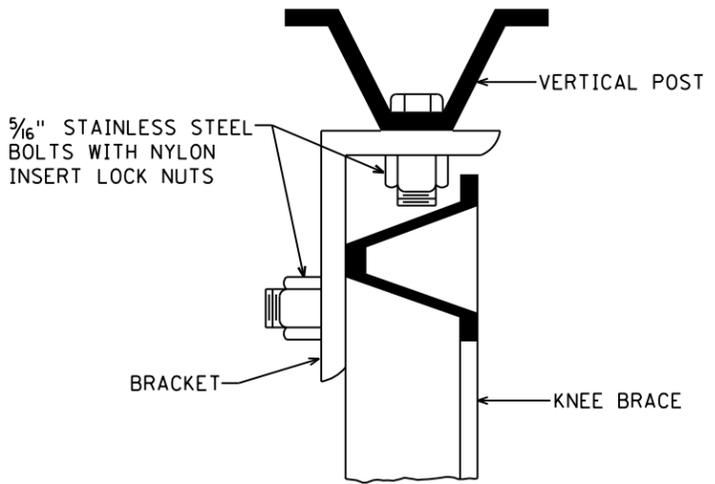
FILE NO.  
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 SS26  
 OF SS30

26  
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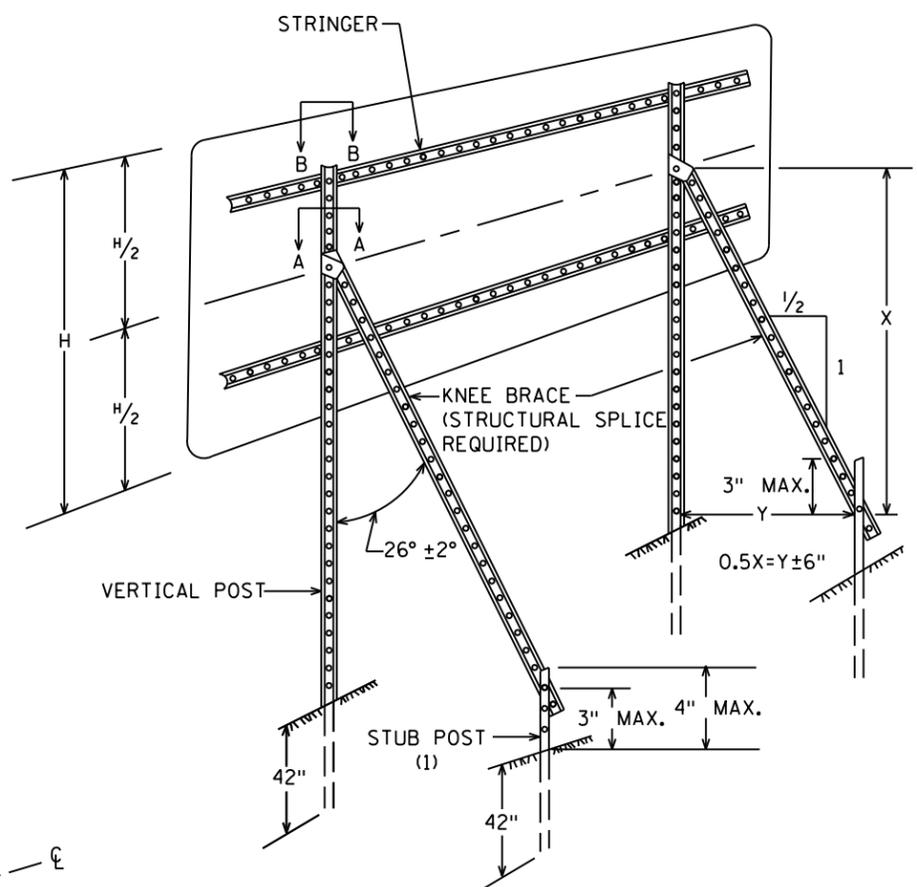
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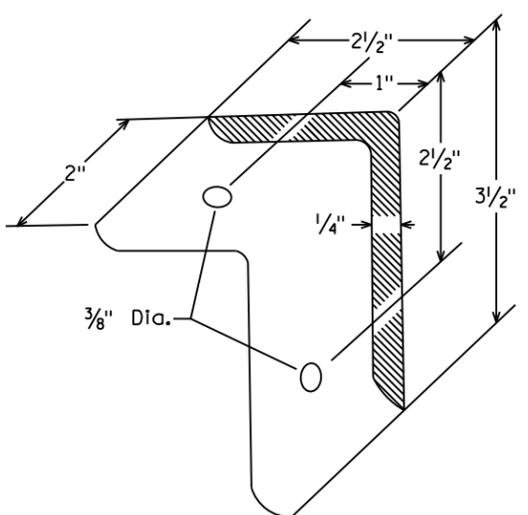
LATERAL BRACE OR STRINGER  
SPLICE DETAIL (EXPLODED VIEW)



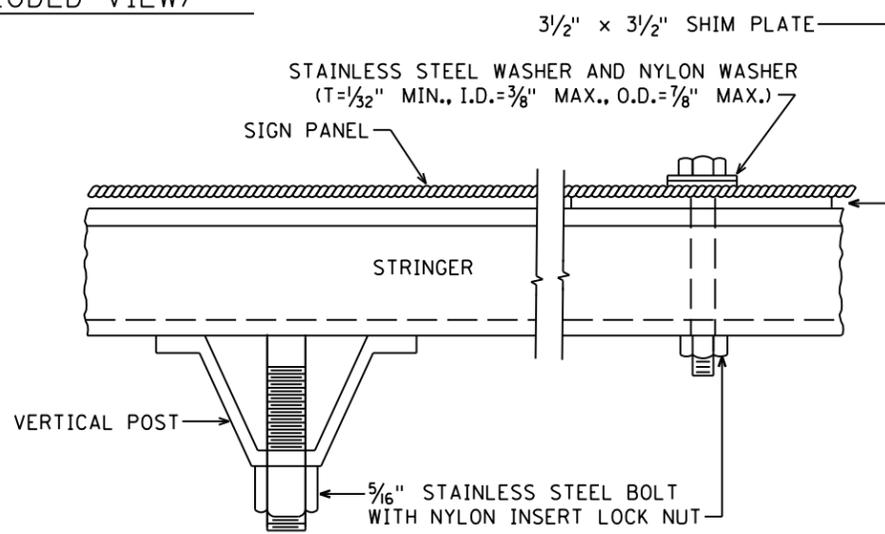
SECTION A-A



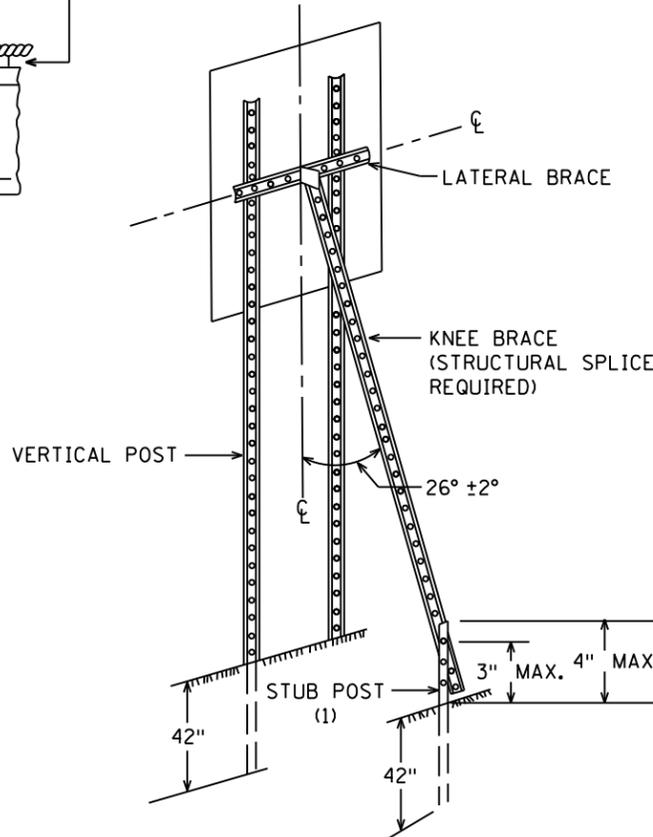
TYPICAL "A-FRAME" INSTALLATION  
TYPE "D" SIGNS



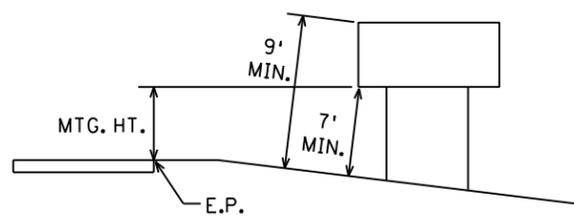
A-FRAME BRACKET  
(STEEL MNDOT 3306 GALVANIZED PER MNDOT 3394)



SECTION B-B



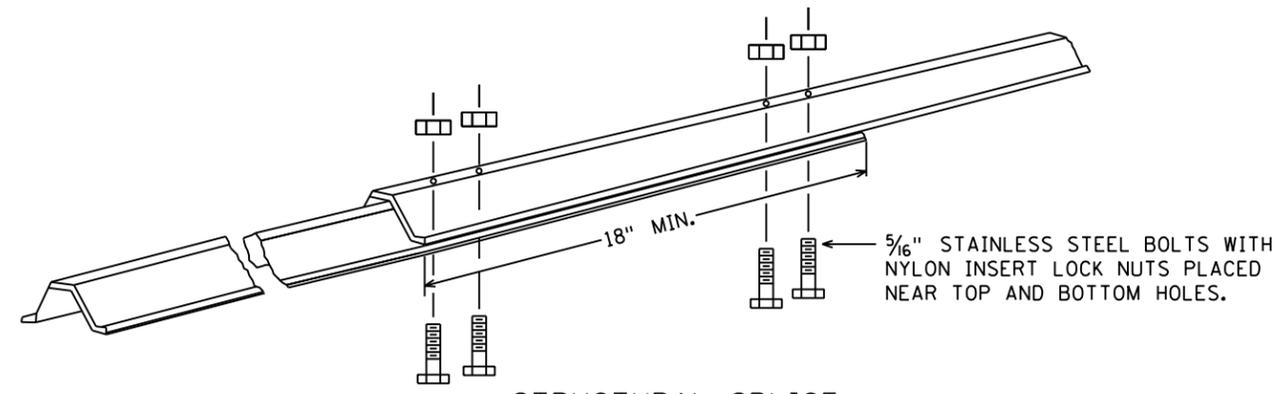
TYPICAL "A-FRAME" INSTALLATION  
TYPE "C" SIGNS



TYPICAL MOUNTING

(1) OFFSET STUB POST 1' TOWARD ROADWAY  
RELATIVE TO VERTICAL POST. ATTACH STUB  
POST AND KNEE BRACE BACK TO BACK.

TYPE C & D SIGN  
STRUCTURAL DETAILS



STRUCTURAL SPLICE  
(USE WHEN IT IS NECESSARY TO FABRICATE THE CORRECT LENGTH OF POST FROM TWO PIECES)

REVISED: 5-5-2017

DESIGN TEAM			
DRAWN BY:	JJP		
DESIGNER:	JJP		
CHECKED BY:	MEK		
NO.	BY	DATE	REVISIONS

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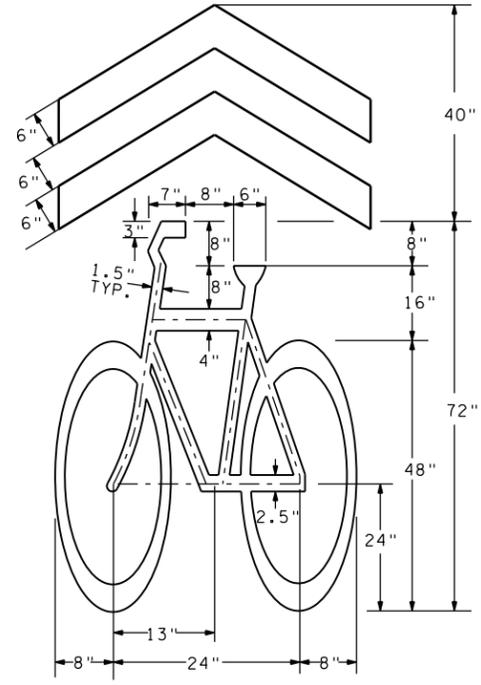


GOLDEN VALLEY  
BIKE LANES

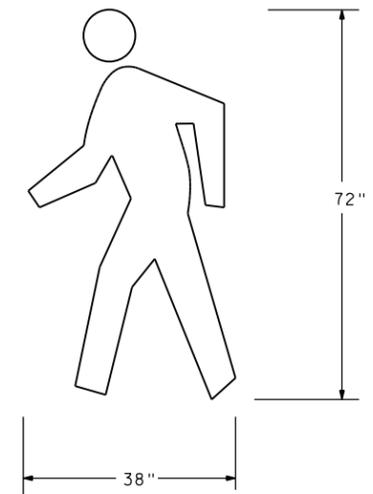
SIGNING AND STRIPING PLAN  
DETAILS

FILE NO. 27  
 GOLDV148501  
 SS27  
 OF SS30  
 47





**SHARED LANE  
PAVEMENT MARKING**



**PEDESTRIAN  
PAVEMENT MARKING**

DESIGN TEAM			
DRAWN BY:	JJP		
DESIGNER:	JJP		
CHECKED BY:	MEK		
NO.	BY	DATE	REVISIONS

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 ST. PAUL, MN 55110

city of golden valley

**GOLDEN VALLEY  
BIKE LANES**

**SIGNING AND STRIPING PLAN**

DETAILS

FILE NO. GOLDV148501	29
SS29 OF SS30	47



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- NOTES:**
- 1) ALL SIGNAL FACES HAVE BACKGROUND SHIELDS.
  - 2) ALL PEDESTRIAN INDICATIONS ARE ONE-SECTION COUNTDOWN TIMER LED "HAND/WALKING PERSON" INDICATIONS.
  - 3) ALL VEHICULAR SIGNAL INDICATIONS ARE LED.
  - 4) ALL HANDHOLES ARE PVC HANDHOLES WITH METAL FRAMES AND COVERS.

**LOOP DETECTOR REPLACEMENT NOTES:**

- 1) ALL ITEMS OF SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE, UNLESS OTHERWISE NOTED ON PLANS.
- 2) CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING HANDHOLES IN THE VICINITY OF CONSTRUCTION, AND SHALL ADJUST HANDHOLES AS NECESSARY TO MATCH FINISHED SURROUNDING GRADE AFTER ROAD WORK HAS BEEN COMPLETED. SEE SPECIAL PROVISIONS AND STATEMENT OF ESTIMATED QUANTITIES.
- 3) LOOP DETECTORS SHALL BE INSTALLED PER MNDOT STANDARD PLATE 8132. NEW LOOP DETECTORS D2-1 AND D6-1 SHALL BE FURNISHED, INSTALLED AND MADE OPERATIONAL BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER AND THE CITY OF GOLDEN VALLEY. SEE SPECIAL PROVISIONS.
- 4) ANY DAMAGE TO INPLACE TRAFFIC SIGNAL FACILITIES (CONDUIT, CABLES, HANDHOLES, SIGNAL POLES, ETC.) SHALL BE REPAIRED BY CONTRACTOR TO THE SATISFACTION OF THE ENGINEER, AT NO EXPENSE TO THE CITY.
- 5) CONTRACTOR SHALL MAINTAIN OPERATION OF SIGNAL SYSTEM AT ALL TIMES, EXCEPT AS OTHERWISE APPROVED BY THE ENGINEER.
- 6) SEE STATEMENT OF ESTIMATED QUANTITIES FOR BID ITEMS FOR WORK AT THIS SIGNAL SYSTEM.
- 7) CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING LOOP-DETECTOR SPLICE KITS (FOR LOOP DETECTORS D2-1 AND D6-1), AND SHALL FURNISH AND INSTALL NEW LOOP DETECTOR SPLICE KITS IN THE ADJACENT HANDHOLE FOR D2-1 AND D6-1 AS CALLED FOR IN THE SPECIAL PROVISIONS.
- 8) NEW LOOP DETECTORS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR ARE BOXED IN AND DENOTED BY F & I (FURNISH AND INSTALL).
- 9) PLACE LOOP DETECTORS IN CENTER OF PROPOSED LANES.

INPLACE LOOP DETECTORS				
NUMBER	SIZE (FT.)	LOCATION	FUNCTION	STATUS
D1-1	2-6x6	20' & 50'	1	INPLACE
D1-2	2-6x6	5' & 35'	1	INPLACE
D2-1	6x6	120'	1	F & I
D6-1	6x6	120'	1	F & I
* DB-1	6x10	120'	3	INPLACE
* DB-2	6x10	30'	1	INPLACE
* DB-3	6x6	0'	7	INPLACE
* DB-4	6x6	0'	1	INPLACE

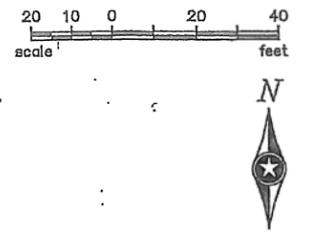
NOTE: LOCATION=DISTANCE FROM CROSSWALK OR STOP BAR TO FRONT OF LOOP DETECTOR.

\* DENOTES NEW LOOP DETECTORS THAT WERE F & I AT APPROXIMATELY SAME LOCATION AS PART OF REVISE SIGNAL SYSTEM WORK COMPLETED IN THE SUMMER OF 2013.

- FUNCTIONS:**
- 1) CALL AND EXTEND
  - 3) EXTEND ONLY
  - 7) DELAYED CALL, IMMEDIATE EXTEND

② MAST ARM POLE FOUNDATION ROTATABLE BASE  
 TYPE A-20-D40-9 (DAVIT AT 350')  
 LUMINAIRE-200 W HPS W/PEC & CHK.SWITCH  
 ONE WAY SIGNAL-OVERHEAD  
 TYPE 20A-POLE MOUNTED 270'  
 R9-3 SIGN PANEL-FACING POLE 1  
 R10-12 SIGN PANEL-ADJACENT TO 6-2  
 TYPE D SIGN PANEL-OVERHEAD  
 ONE WAY EVP DETECTOR & LIGHT (#6,1)  
 EXTENDED INTO H.H.4:  
 3"R.S.C.  
 2-12/c#12  
 1-3/c#12  
 1-3/c#20  
 1-3/c#12 (LUM.)

③ MAST ARM POLE FOUNDATION ROTATABLE BASE  
 TYPE A-20  
 ONE WAY SIGNAL-OVERHEAD  
 TYPE 10B-POLE MOUNTED 270'  
 PEDESTRIAN PUSH BUTTON & SIGN (R10-3e)  
 TYPE D SIGN PANEL-OVERHEAD  
 ONE WAY EVP DETECTOR & LIGHT (#8)  
 EXTENDED INTO H.H.5:  
 3"R.S.C.  
 1-12/c#12  
 2-3/c#12  
 1-3/c#20



Ⓐ EQUIPMENT PAD CONTROLLER AND CABINET SIGNAL SERVICE CABINET

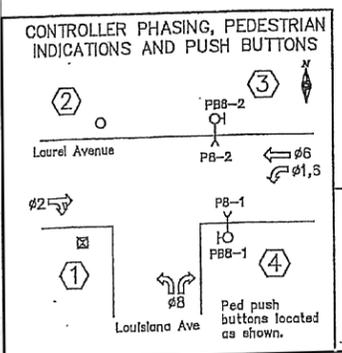
CONTROLLER CABINET TO H.H.1:  
 3"R.S.C.  
 3-12/c#12  
 2-3/c#12  
 1-3/c#20  
 1-2/c#14  
 3"R.S.C.  
 3-12/c#12  
 4-3/c#12  
 2-3/c#20  
 5-2/c#14  
 1-2/c#12

CONTROLLER CABINET TO H.H.9:  
 2"R.S.C.  
 2-2/c#14  
 1-6 Pr.#19

SERVICE CABINET TO H.H.1:  
 2"R.S.C.  
 2-3/c#12 (LUM.)

SERVICE CABINET TO H.H.11:  
 2"R.S.C.  
 3-1/c#00

BETWEEN SERVICE CABINET AND CONTROLLER CABINET:  
 1 1/4"R.S.C.  
 2-1/c#6  
 1-1/c#6 Br.Gr.



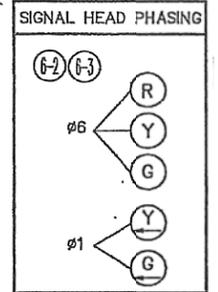
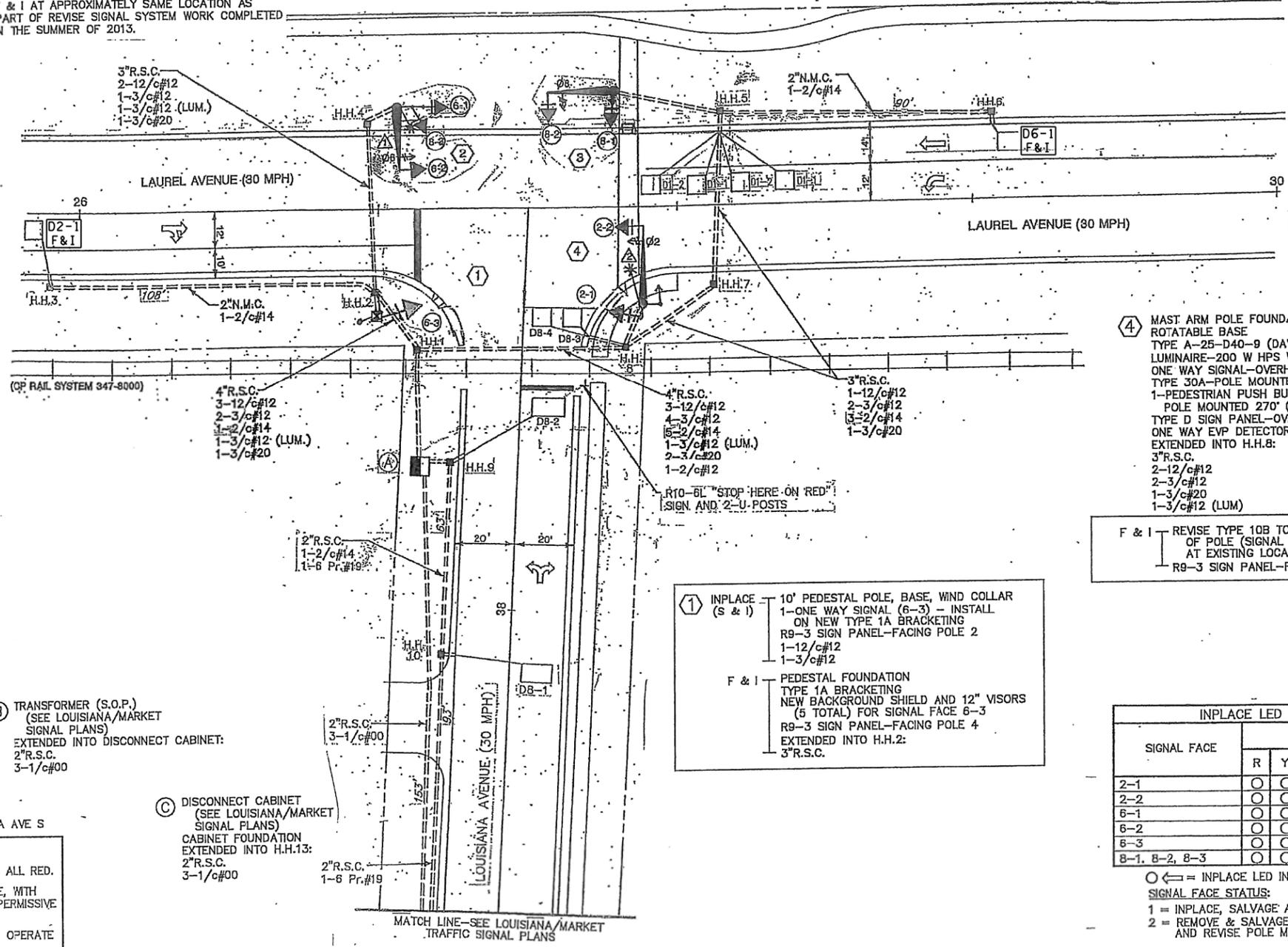
METER ADDRESS = 856 LOUISIANA AVE S

**SIGNAL SYSTEM OPERATION:**

- SIGNAL SYSTEM FLASH MODE IS ALL RED.
- NORMAL OPERATION IS 3 PHASE, WITH PHASE 1 BEING A PROTECTED/PERMISSIVE LEFT TURN PHASE.
- VEHICLE SIGNAL PHASES 2 & 6 OPERATE ON RECALL.

Ⓑ TRANSFORMER (S.O.P.) (SEE LOUISIANA/MARKET SIGNAL PLANS) EXTENDED INTO DISCONNECT CABINET:  
 2"R.S.C.  
 3-1/c#00

Ⓒ DISCONNECT CABINET (SEE LOUISIANA/MARKET SIGNAL PLANS) CABINET FOUNDATION EXTENDED INTO H.H.13:  
 2"R.S.C.  
 3-1/c#00



④ MAST ARM POLE FOUNDATION ROTATABLE BASE  
 TYPE A-25-D40-9 (DAVIT AT 350')  
 LUMINAIRE-200 W HPS W/PEC & CHK.SWITCH  
 ONE WAY SIGNAL-OVERHEAD  
 TYPE 30A-POLE MOUNTED 90'  
 1-PEDESTRIAN PUSH BUTTON & SIGN (R10-3e)-POLE MOUNTED 270' (PBB-1)  
 TYPE D SIGN PANEL-OVERHEAD  
 ONE WAY EVP DETECTOR & LIGHT (#2)  
 EXTENDED INTO H.H.8:  
 3"R.S.C.  
 2-12/c#12  
 2-3/c#12  
 1-3/c#20  
 1-3/c#12 (LUM.)

F & I REVISE TYPE 10B TO TYPE 10A ON 180° SIDE OF POLE (SIGNAL HEAD 2-1 MAINTAINED AT EXISTING LOCATION)  
 R9-3 SIGN PANEL-FACING POLE 1

① INPLACE (S & I) 10' PEDESTAL POLE, BASE, WIND COLLAR  
 1-ONE WAY SIGNAL (6-3) - INSTALL ON NEW TYPE 1A BRACKETING  
 R9-3 SIGN PANEL-FACING POLE 2  
 1-12/c#12  
 1-3/c#12

F & I PEDESTAL FOUNDATION  
 TYPE 1A BRACKETING  
 NEW BACKGROUND SHIELD AND 12" VISORS (5 TOTAL) FOR SIGNAL FACE 6-3  
 R9-3 SIGN PANEL-FACING POLE 4  
 EXTENDED INTO H.H.2:  
 3"R.S.C.

INPLACE LED SIGNAL FACES						
SIGNAL FACE	ALL 12"					STATUS
	R	Y	G	Y	G	
2-1	○	○	○			2
2-2	○	○	○			INPLACE
6-1	○	○	○			INPLACE
6-2	○	○	○	←	←	INPLACE
6-3	○	○	○	←	←	1, 2
8-1, 8-2, 8-3	○	○	○	←	←	INPLACE

○ ← = INPLACE LED INDICATION, REUSE INPLACE.  
**SIGNAL FACE STATUS:**  
 1 = INPLACE, SALVAGE AND INSTALL.  
 2 = REMOVE & SALVAGE PEDESTRIAN SIGNAL FACE, AND REVISE POLE MOUNTED BRACKETING.

DESIGN TEAM			
DRAWN BY:	JJP		
DESIGNER:	JJP		
CHECKED BY:	MEK		
NO.	BY	DATE	REVISIONS

I hereby certify that this plan 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.

Certified By: *Michael E. Kotila* Lic. No. 19254  
 Licensed Professional Engineer  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019

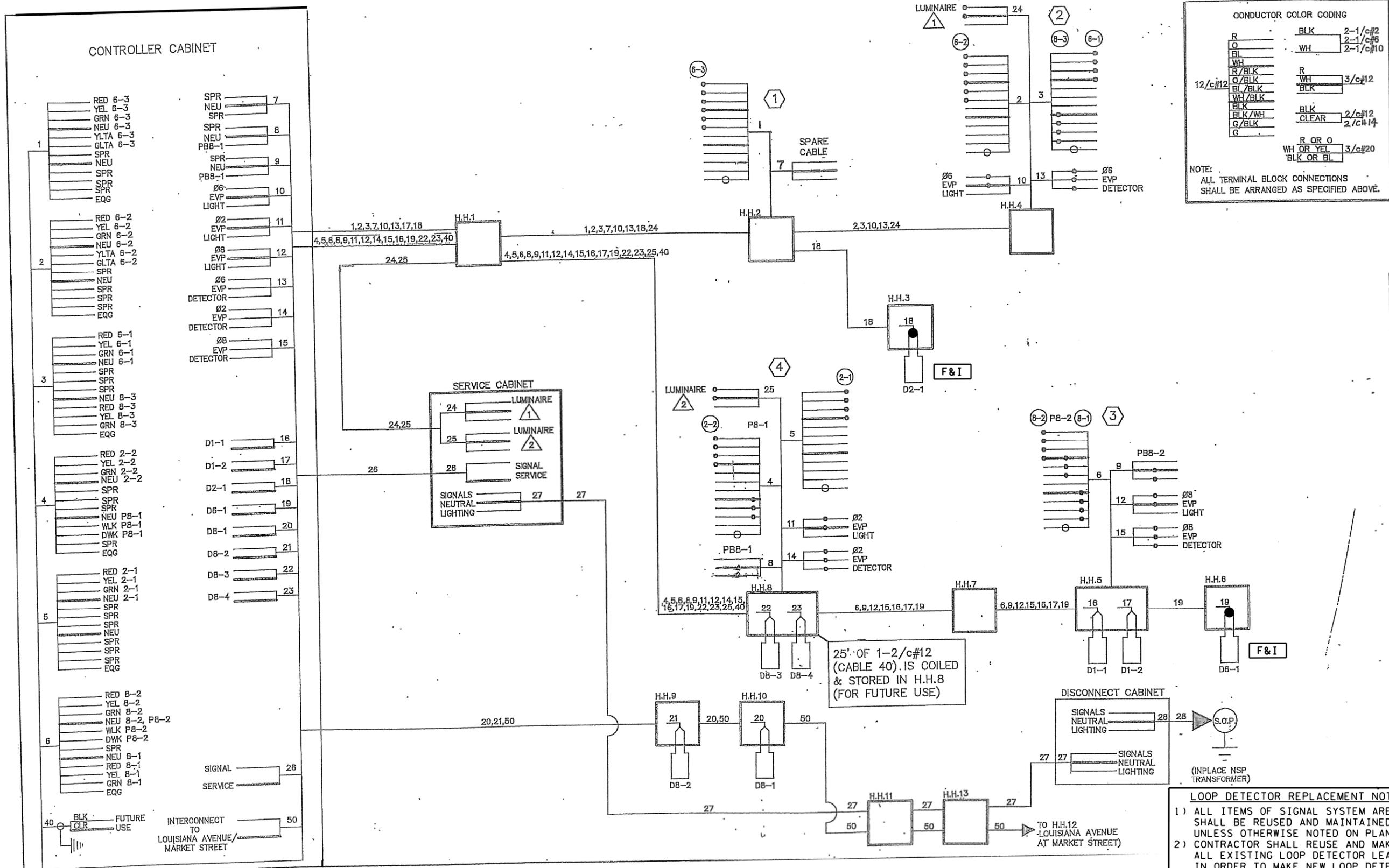


GOLDEN VALLEY  
 BIKE LANES

LOOP DETECTOR REPLACEMENT  
 INTERSECTION LAYOUT  
 LAUREL & LOUISIANA

FILE NO. 31  
 GOLDV148501  
 SGL1  
 OF SGL10 47

9:53:26 AM  
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 carvidson  
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- LOOP DETECTOR REPLACEMENT NOTES:**
- 1) ALL ITEMS OF SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE, UNLESS OTHERWISE NOTED ON PLANS.
  - 2) CONTRACTOR SHALL REUSE AND MAKE OPERATIONAL ALL EXISTING LOOP DETECTOR LEAD-IN CABLES IN ORDER TO MAKE NEW LOOP DETECTORS D2-1 AND D6-1 OPERATIONAL.
  - 3) (F & I) DENOTES NEW LOOP DETECTORS TO BE FURNISHED AND INSTALLED BY CONTRACTOR AS PART OF THE PROJECT.
  - 4) ● = NEW TERMINATION ON EXISTING LEAD-IN CABLE.

DESIGN TEAM			
DRAWN BY:	JJP		
DESIGNER:	JJP		
CHECKED BY:	MEK		
NO.	BY	DATE	REVISIONS

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 Licensed Professional Engineer  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019



**GOLDEN VALLEY BIKE LANES**

**LOOP DETECTOR REPLACEMENT WIRING DIAGRAM**  
 LAUREL & LOUISIANA

FILE NO.	32
GOLDV148501	
SGL2	
OF SGL10	47

FILE: P:\FJ\G\GoldV\148501\5-final-dsgn\51-dr-arwings\90-GIS\Data\DWG\Plansheets\148501\_SGL1.dgn  
 MODEL: SGL3  
 9:53:46 AM  
 8/1/2019  
 carvidson

- NOTES:**
- 1) ALL SIGNAL FACES HAVE BACKGROUND SHIELDS.
  - 2) ALL PEDESTRIAN INDICATIONS ARE ONE-SECTION COUNTDOWN TIMER LED "HAND/WALKING PERSON" INDICATIONS.
  - 3) ALL VEHICULAR SIGNAL INDICATIONS ARE LED.
  - 4) ALL HANDHOLES ARE PVC HANDHOLES WITH METAL FRAMES AND COVERS.

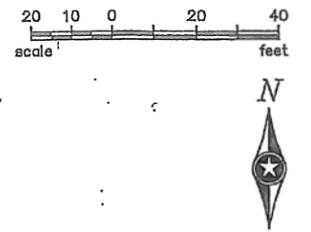
- REVISE SIGNAL SYSTEM NOTES:**
- 1) ALL ITEMS OF SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE, UNLESS OTHERWISE NOTED.
  - 2) CONTRACTOR SHALL BE RESPONSIBLE FOR ANY MODIFICATIONS TO INPLACE POLE MOUNTED BRACKETING ON EACH TRAFFIC SIGNAL POLE TO ACCOMMODATE REMOVAL AND SALVAGING OF EXISTING PEDESTRIAN SIGNAL INDICATIONS (INCLUDING REPLACEMENT OF POLE MOUNTED BRACKETING IF NEEDED TO ACCOMMODATE PEDESTRIAN SIGNAL INDICATION REMOVAL AND SALVAGING) (INCIDENTAL).
  - 3) ALL TRAFFIC SIGNAL CABLES AND CONDUCTORS ARE INPLACE AND SHALL BE REUSED AS SHOWN (NO NEW TRAFFIC SIGNAL CABLES AND CONDUCTORS ARE REQUIRED TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR AS PART OF THIS PROJECT).
  - 4) CONTRACTOR SHALL REMOVE INPLACE PEDESTRIAN PUSH BUTTONS AND R10-3e PUSH BUTTON INSTRUCTION SIGNS (STICKERS) FROM POLES 1 AND 4 AS NOTED ON PLANS, SHALL TOUCH-UP PAINT AREAS ON EACH SIGNAL POLE WHERE PUSH BUTTONS AND SIGNS WERE REMOVED, AND SHALL PLUG ALL HOLES ON EACH POLE WHERE PUSH BUTTONS WERE REMOVED.
  - 5) CONTRACTOR SHALL MAINTAIN OPERATION OF THE SIGNAL SYSTEM AT ALL TIMES, EXCEPT AS OTHERWISE APPROVED BY THE ENGINEER.
  - 6) ANY DAMAGE TO INPLACE TRAFFIC SIGNAL POLES OR VEHICLE SIGNAL HEADS AND BRACKETING DUE TO WORK ON THIS PROJECT SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER, AT NO EXPENSE TO THE CITY.
  - 7) CONTRACTOR SHALL FOLLOW ALL STANDARD PROCEDURES WHEN WORKING NEAR RAILROAD TRACKS AND SHALL CONTACT APPROPRIATE RAILROAD COMPANY PERSONNEL TO INFORM THEM OF WORK NEAR RAILROAD FACILITIES (WITHIN CITY RIGHT OF WAY) (INCIDENTAL).
  - 8) (F & I) = FURNISH AND INSTALL BY CONTRACTOR.  
(S & I) = SALVAGE AND INSTALL BY CONTRACTOR.

INPLACE LOOP DETECTORS			
NUMBER	SIZE (FT.)	LOCATION	FUNCTION
D1-1	2-6x6	20' & 50'	1
D1-2	2-6x6	5' & 35'	1
D2-1	6x6	120'	1
D6-1	6x6	120'	1
* DB-1	6x10	120'	3
* DB-2	6x10	30'	1
* DB-3	6x6	0'	7
* DB-4	6x6	0'	1

- FUNCTIONS:**
- 1) CALL & EXTEND
  - 3) EXTEND ONLY
  - 7) DELAYED CALL, IMMEDIATE EXTEND

NOTE: LOCATION=DISTANCE FROM CROSSWALK OR STOP BAR TO FRONT OF LOOP DETECTOR.

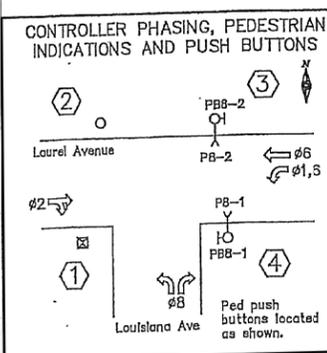
\* DENOTES NEW LOOP DETECTORS THAT WERE F & I AT APPROXIMATELY SAME LOCATION AS PART OF REVISE SIGNAL SYSTEM WORK COMPLETED IN THE SUMMER OF 2013.



# FOR INFORMATION ONLY

- A** EQUIPMENT PAD CONTROLLER AND CABINET SIGNAL SERVICE CABINET
- CONTROLLER CABINET TO H.H.1:  
 3"R.S.C.  
 3-12/c#12  
 2-3/c#12  
 1-3/c#20  
 1-2/c#14  
 3"R.S.C.  
 3-12/c#12  
 4-3/c#12  
 2-3/c#20  
 5-2/c#14  
 1-2/c#12
- CONTROLLER CABINET TO H.H.9:  
 2"R.S.C.  
 2-2/c#14  
 1-6 Pr.#19

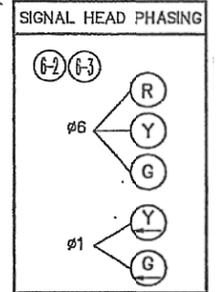
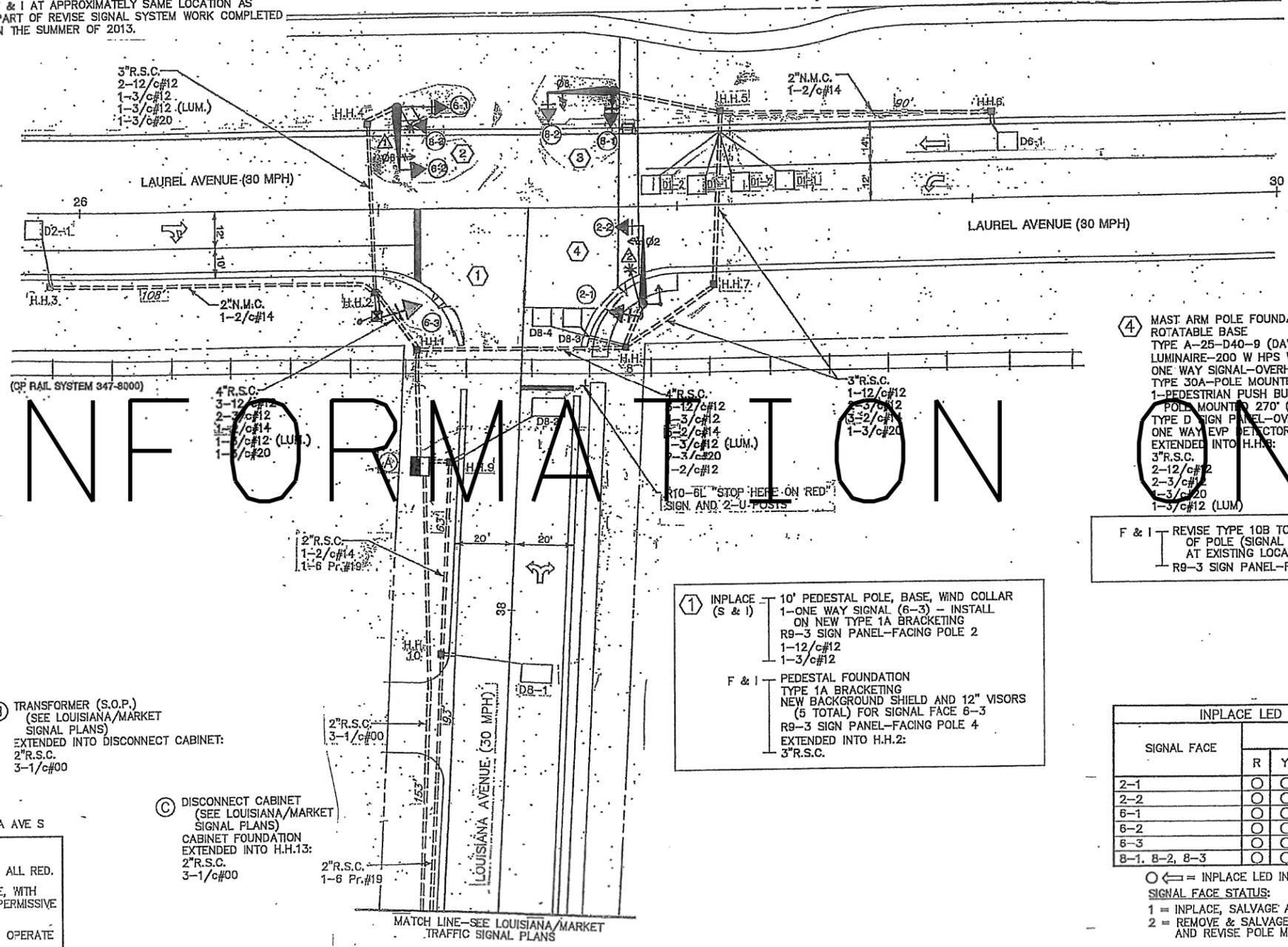
- SERVICE CABINET TO H.H.1:  
 2"R.S.C.  
 2-3/c#12 (LUM.)
- SERVICE CABINET TO H.H.11:  
 2"R.S.C.  
 3-1/c#00
- BETWEEN SERVICE CABINET AND CONTROLLER CABINET:  
 1 1/4"R.S.C.  
 2-1/c#6  
 1-1/c#6 Br.Gr.



- METER ADDRESS = 856 LOUISIANA AVE S
- SIGNAL SYSTEM OPERATION:**
- SIGNAL SYSTEM FLASH MODE IS ALL RED.
  - NORMAL OPERATION IS 3 PHASE, WITH PHASE 1 BEING A PROTECTED/PERMISSIVE LEFT TURN PHASE.
  - VEHICLE SIGNAL PHASES 2 & 6 OPERATE ON RECALL.

- B** TRANSFORMER (S.O.P.) (SEE LOUISIANA/MARKET SIGNAL PLANS) EXTENDED INTO DISCONNECT CABINET:  
 2"R.S.C.  
 3-1/c#00

- C** DISCONNECT CABINET (SEE LOUISIANA/MARKET SIGNAL PLANS) CABINET FOUNDATION EXTENDED INTO H.H.13:  
 2"R.S.C.  
 3-1/c#00



- 4** MAST ARM POLE FOUNDATION ROTATABLE BASE  
 TYPE A-25-D40-9 (DAVIT AT 350')  
 LUMINAIRE-200 W HPS W/PEC & CHK.SWITCH  
 ONE WAY SIGNAL-OVERHEAD  
 TYPE 30A-POLE MOUNTED 90°  
 1-PEDESTRIAN PUSH BUTTON & SIGN (R10-3e)-  
 POLE MOUNTED 270° (PBB-1)  
 TYPE D SIGN PANEL-OVERHEAD  
 ONE WAY EVP DETECTOR & LIGHT (#2)  
 EXTENDED INTO H.H.8:  
 3"R.S.C.  
 2-12/c#12  
 2-3/c#12  
 1-3/c#20  
 1-3/c#12 (LUM.)

F & I REVISE TYPE 10B TO TYPE 10A ON 180° SIDE OF POLE (SIGNAL HEAD 2-1 MAINTAINED AT EXISTING LOCATION)  
 R9-3 SIGN PANEL-FACING POLE 1

- 1** INPLACE (S & I) 10' PEDESTAL POLE, BASE, WIND COLLAR  
 1-ONE WAY SIGNAL (6-3) - INSTALL ON NEW TYPE 1A BRACKETING  
 R9-3 SIGN PANEL-FACING POLE 2  
 1-12/c#12  
 1-3/c#12
- F & I PEDESTAL FOUNDATION  
 TYPE 1A BRACKETING  
 NEW BACKGROUND SHIELD AND 12" VISORS (5 TOTAL) FOR SIGNAL FACE 6-3  
 R9-3 SIGN PANEL-FACING POLE 4  
 EXTENDED INTO H.H.2:  
 3"R.S.C.

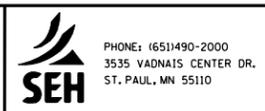
SIGNAL FACE	INPLACE LED SIGNAL FACES					STATUS
	R	Y	G	Y	G	
2-1	○	○	○			2
2-2	○	○	○			INPLACE
6-1	○	○	○			INPLACE
6-2	○	○	○	←	←	INPLACE
6-3	○	○	○	←	←	1, 2
8-1, 8-2, 8-3	○	○	○			INPLACE

○ ← = INPLACE LED INDICATION, REUSE INPLACE.  
**SIGNAL FACE STATUS:**  
 1 = INPLACE, SALVAGE AND INSTALL.  
 2 = REMOVE & SALVAGE PEDESTRIAN SIGNAL FACE, AND REVISE POLE MOUNTED BRACKETING.

DESIGN TEAM			
DRAWN BY:	JJP		
DESIGNER:	JJP		
CHECKED BY:	MEK		
NO.	BY	DATE	REVISIONS

I hereby certify that this plan 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.

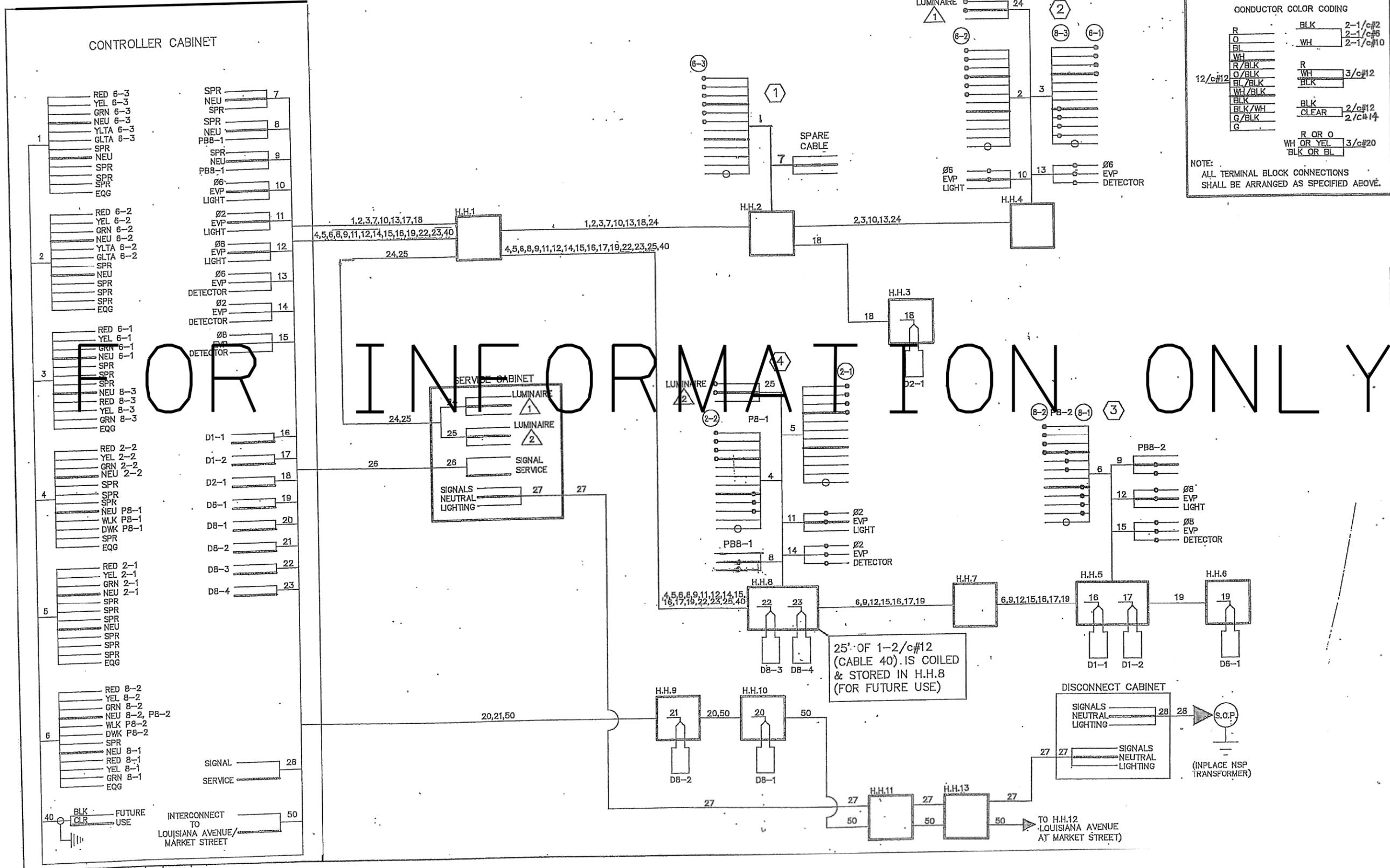
Certified By: *Michael E. Kotila* Lic. No. 19254  
 Licensed Professional Engineer  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019



**GOLDEN VALLEY BIKE LANES**

**AS-BUILTS**  
 LAUREL & LOUISIANA

FILE NO.	33
GOLDV148501	
SGL3 OF SGL10	47

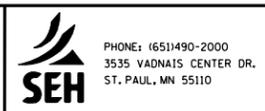


FOR INFORMATION ONLY

DESIGN TEAM			
DRAWN BY:	JJP		
DESIGNER:	JJP		
CHECKED BY:	MEK		
NO.	BY	DATE	REVISIONS

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Certified By: *Michael E. Kotila* Lic. No. 19254  
 Licensed Professional Engineer  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019



GOLDEN VALLEY  
BIKE LANES

AS-BUILTS  
LAUREL & LOUISIANA

FILE NO.	34
GOLDV148501	
SGL 4	
OF SGLIO	47



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 DESIGNER: JJP  
 CHECKED BY: MEK  
 9:54:52 AM  
 8/1/2019  
 carvidson

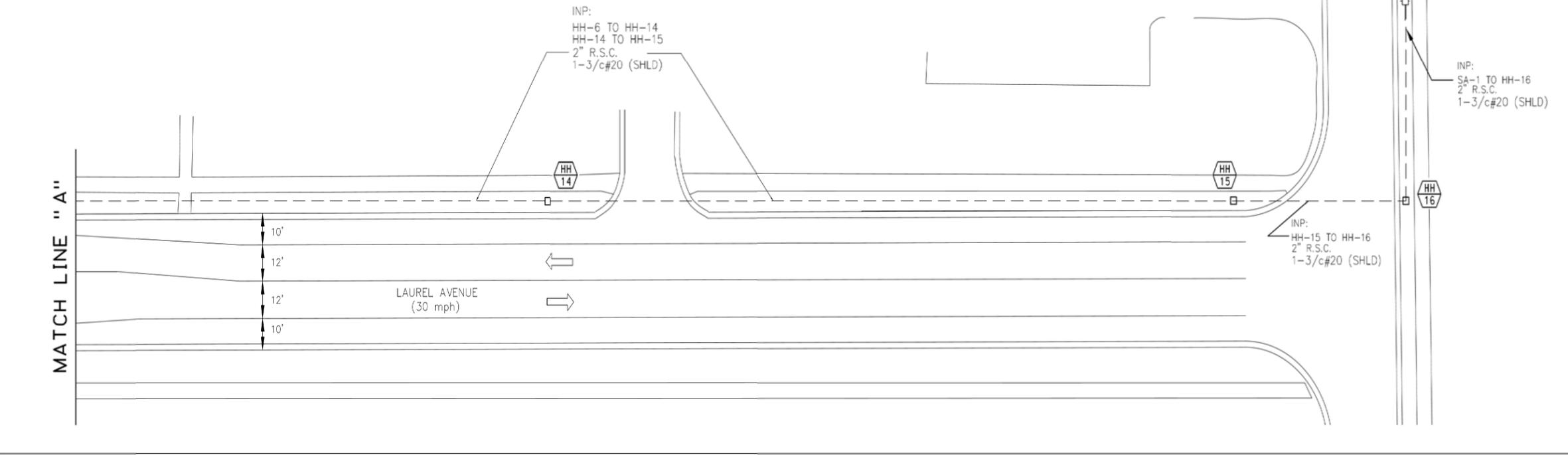
SIGNAL POLE NO.	FACE NO.	SIGNAL FACE MOUNT	SIGNAL $\phi$	VEHICULAR INDICATION SIZE AND TYPE IN (in.)						PEDESTRIAN IN (in.)		BRACKET MOUNTING ANGLE, TYPE AND STANDARD PLATE NO.
				CIRCULAR			TURN ARROWS			DON'T WALK	WALK	
				RED	YELLOW	GREEN	RED	YELLOW	GREEN			
MA-1	6-2	WAST ARM (END)	6	12	12	12						ONE WAY MOUNT/PLATE M8124E
	6-1	POLE MOUNT	6	12	12	12			**	**		180°, TYPE 10B/PLATE M8110D
	8-4	POLE MOUNT	8	12	12	12		12	12	**	**	90°, TYPE 10B/PLATE M8110D
	-	POLE MOUNT	4									
MA-2	8-3	WAST ARM (END)	8	12	12	12		12	12			ONE WAY MOUNT/PLATE M8124E
	8-2	WAST ARM (MD)	8	12	12	12						ONE WAY MOUNT/PLATE M8124E
	8-1	POLE MOUNT	8	12	12	12				**	**	180°, TYPE 10B/PLATE M8110D
	2-3	POLE MOUNT	2	12	12	12				**	**	90°, TYPE 10B/PLATE M8110D
MA-3	2-2	WAST ARM (END)	2	12	12	12						ONE WAY MOUNT/PLATE M8124E
	2-1	POLE MOUNT	2	12	12	12				**	**	180°, TYPE 10B/PLATE M8110D
	4-4	POLE MOUNT	4	12	12	12		12	12	**	**	90°, TYPE 10B/PLATE M8110D
	-	POLE MOUNT	8									
MA-4	4-3	WAST ARM (END)	4	12	12	12		12	12			ONE WAY MOUNT/PLATE M8124E
	4-2	WAST ARM (MD)	4	12	12	12						ONE WAY MOUNT/PLATE M8124E
	4-1	POLE MOUNT	4	12	12	12				**	**	180°, TYPE 10B/PLATE M8110D
	6-3	POLE MOUNT	6	12	12	12				**	**	90°, TYPE 10B/PLATE M8110D
-	POLE MOUNT	2							**	**		

\*\* = ONE SECTION HAND/WALKING PERSON INDICATION (SEE SPECIAL PROVISIONS).

SIGNAL STRUCTURE AND COMPONENT LOCATION			
NO.	LOCATION	NO.	LOCATION
HH-1	AS SHOWN	HH-12	AS SHOWN
HH-2	AS SHOWN	HH-13	AS SHOWN
HH-3	AS SHOWN		
HH-4	AS SHOWN	HH-14	AS SHOWN
HH-5	AS SHOWN	HH-15	AS SHOWN
HH-6	AS SHOWN	HH-16	AS SHOWN
HH-7	AS SHOWN	HH-17	AS SHOWN
HH-8	AS SHOWN	HH-104	AS SHOWN
HH-9	AS SHOWN	CAC-1	AS SHOWN
HH-10	AS SHOWN	SP-1	AS SHOWN
HH-11	AS SHOWN	SOP-1	AS SHOWN

NO.	LOCATION
MA-1	AS SHOWN (30° ARM)
MA-2	AS SHOWN (30° ARM)
MA-3	AS SHOWN (35° ARM)
MA-4	AS SHOWN (40° ARM)
SA-1	AS SHOWN (PEDESTAL POLE AND BASE FOR ADVANCE EVP DETECTOR)

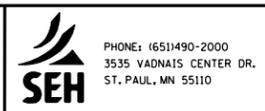
NO.	LOCATION	LOOP SIZE (ft)	NO. OF TURNS	DETECTOR FUNCTION	STATUS
D2-1,2,3	AS SHOWN	6 x 6	4	(2)	INPLACE
D2-4,5,6	AS SHOWN	6 x 6	4	(2)	INPLACE
D3-1,2,3,4	AS SHOWN	6 x 6	4	(1)	INPLACE
D4-1	AS SHOWN	6 x 6	4	(1)	INPLACE
D6-1,2,3	AS SHOWN	6 x 6	4	(2)	F&I
D7-1,2,3,4	AS SHOWN	6 x 6	4	(1)	INPLACE
D8-1	AS SHOWN	6 x 6	4	(1)	INPLACE
D6-4,5,6	AS SHOWN	6 x 6	4	(2)	F&I



DESIGN TEAM			
DRAWN BY:	JJP		
DESIGNER:	JJP		
CHECKED BY:	MEK		
NO.	BY	DATE	REVISIONS

I hereby certify that this plan 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.

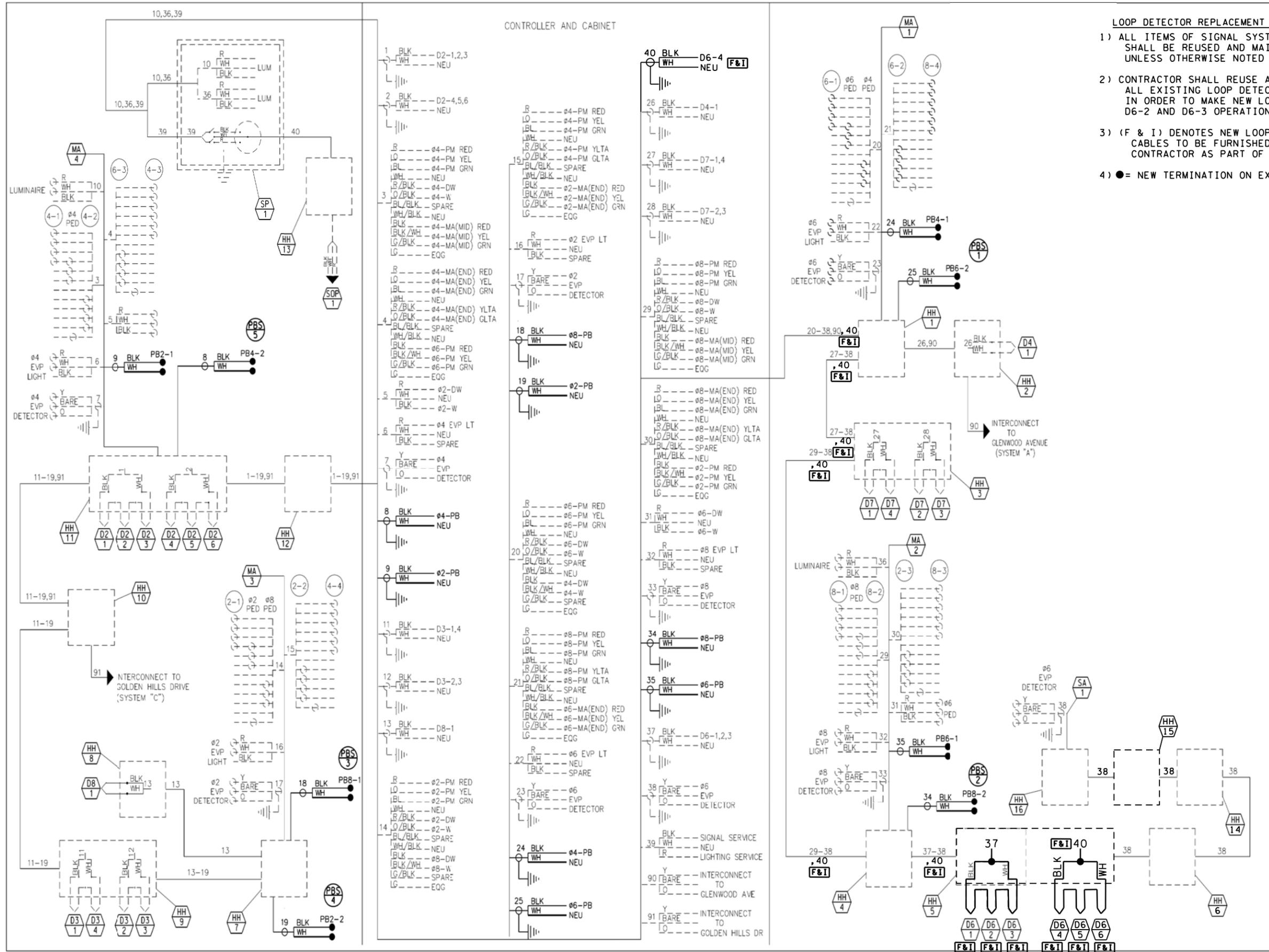
Certified By: *Michael E. Kotila* Lic. No. 19254  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019



GOLDEN VALLEY  
BIKE LANES

LOOP DETECTOR REPLACEMENT  
INTERSECTION LAYOUT  
LAUREL & XENIA

FILE NO. GOLDV148501	36
SGL6 OF SGL10	47

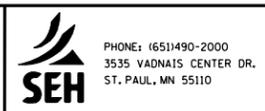


- LOOP DETECTOR REPLACEMENT NOTES:**
- 1) ALL ITEMS OF SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE, UNLESS OTHERWISE NOTED ON PLANS.
  - 2) CONTRACTOR SHALL REUSE AND MAKE OPERATIONAL ALL EXISTING LOOP DETECTOR LEAD-IN CABLES IN ORDER TO MAKE NEW LOOP DETECTORS D6-1, D6-2 AND D6-3 OPERATIONAL.
  - 3) (F & I) DENOTES NEW LOOP DETECTORS & LEAD-IN CABLES TO BE FURNISHED AND INSTALLED BY CONTRACTOR AS PART OF THE PROJECT.
  - 4) ● = NEW TERMINATION ON EXISTING LEAD-IN CABLE.

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DRAWN BY:	JJP		
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CHECKED BY:	MEK		
NO.	BY	DATE	REVISIONS

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Certified By: *Michael E. Kotila* Lic. No. 19254  
 Licensed Professional Engineer  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019



**GOLDEN VALLEY BIKE LANES**

**LOOP DETECTOR REPLACEMENT WIRING DIAGRAM**  
 LAUREL & XENIA

FILE NO. GOLDV148501	37
SGL7 OF SGL10	47



9:55:44 AM

8/1/2019

carvidson

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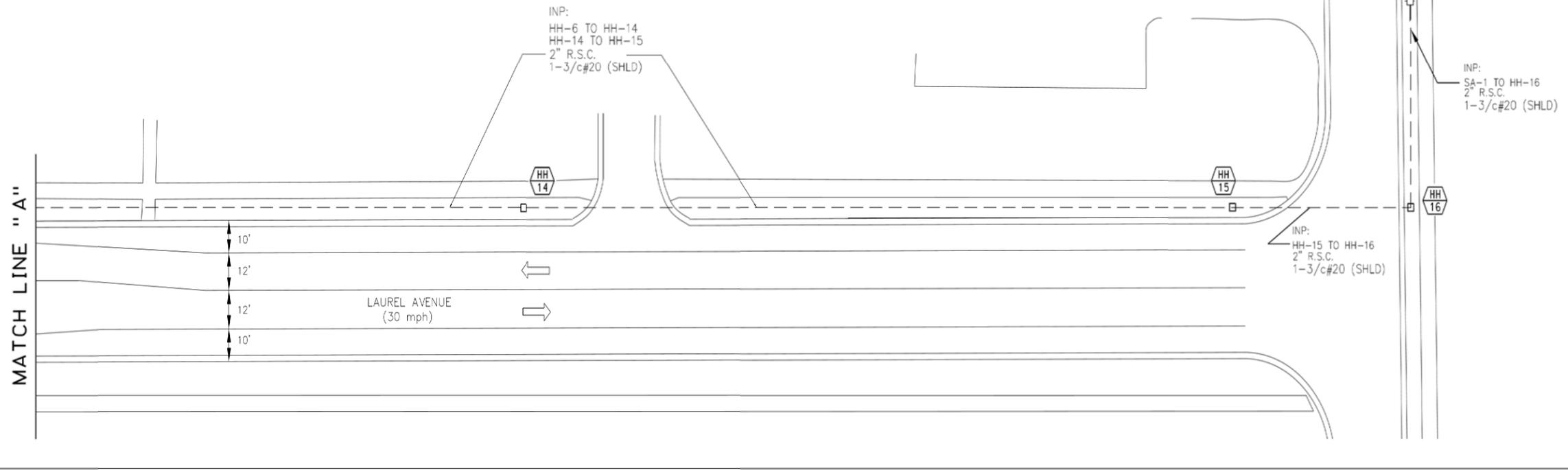
SIGNAL POLE NO.	FACE NO.	SIGNAL FACE MOUNT	SIGNAL Ø	VEHICULAR INDICATION SIZE AND TYPE IN (in.)						PEDESTRIAN IN (in.)		BRACKET MOUNTING ANGLE, TYPE AND STANDARD PLATE NO.
				CIRCULAR			TURN ARROWS			DON'T WALK	WALK	
				RED	YELLOW	GREEN	RED	YELLOW	GREEN			
MA-1	6-2	WAST ARM (END)	6	12	12	12						ONE WAY MOUNT/PLATE M8124E
	6-1	POLE MOUNT	6	12	12	12			**	**		180°, TYPE 10B/PLATE M8110D
	8-4	POLE MOUNT	8	12	12	12		12	12	**	**	90°, TYPE 10B/PLATE M8110D
	-	POLE MOUNT	4									
MA-2	8-3	WAST ARM (END)	8	12	12	12		12	12			ONE WAY MOUNT/PLATE M8124E
	8-2	WAST ARM (MD)	8	12	12	12						ONE WAY MOUNT/PLATE M8124E
	8-1	POLE MOUNT	8	12	12	12				**	**	180°, TYPE 10B/PLATE M8110D
	2-3	POLE MOUNT	2	12	12	12				**	**	90°, TYPE 10B/PLATE M8110D
MA-3	2-2	WAST ARM (END)	2	12	12	12						ONE WAY MOUNT/PLATE M8124E
	2-1	POLE MOUNT	2	12	12	12				**	**	180°, TYPE 10B/PLATE M8110D
	4-4	POLE MOUNT	4	12	12	12		12	12	**	**	90°, TYPE 10B/PLATE M8110D
	-	POLE MOUNT	8							**	**	
MA-4	4-3	WAST ARM (END)	4	12	12	12		12	12			ONE WAY MOUNT/PLATE M8124E
	4-2	WAST ARM (MD)	4	12	12	12						ONE WAY MOUNT/PLATE M8124E
	4-1	POLE MOUNT	4	12	12	12				**	**	180°, TYPE 10B/PLATE M8110D
	6-3	POLE MOUNT	6	12	12	12				**	**	90°, TYPE 10B/PLATE M8110D
-	POLE MOUNT	2							**	**		

\*\* = ONE SECTION HAND/WALKING PERSON INDICATION (SEE SPECIAL PROVISIONS).

SIGNAL STRUCTURE AND COMPONENT LOCATION			
NO.	LOCATION	NO.	LOCATION
HH-1	AS SHOWN	HH-12	AS SHOWN
HH-2	AS SHOWN	HH-13	AS SHOWN
HH-3	AS SHOWN		
HH-4	AS SHOWN	HH-14	AS SHOWN
HH-5	AS SHOWN	HH-15	AS SHOWN
HH-6	AS SHOWN	HH-16	AS SHOWN
HH-7	AS SHOWN	HH-17	AS SHOWN
HH-8	AS SHOWN	HH-104	AS SHOWN
HH-9	AS SHOWN	CAC-1	AS SHOWN
HH-10	AS SHOWN	SP-1	AS SHOWN
HH-11	AS SHOWN	SOP-1	AS SHOWN

NO.	LOCATION
MA-1	AS SHOWN (30' ARM)
MA-2	AS SHOWN (35' ARM)
MA-3	AS SHOWN (35' ARM)
MA-4	AS SHOWN (40' ARM)
SA-	AS SHOWN (PEDESTAL POLE AND BASE FOR ADVANCE VMP DETECTOR)

NO.	LOCATION	LOOP SIZE (ft)	NO. OF TURNS	DETECTOR FUNCTION
D2-1,2,3	AS SHOWN	6 x 6	4	(2)
D2-4,5,6	AS SHOWN	6 x 6	4	(2)
D3-1,2,3,4	AS SHOWN	6 x 6	4	(1)
D4-1	AS SHOWN	6 x 6	4	(1)
D6-1,2,3	AS SHOWN	6 x 6	4	(2)
D7-1,2,3,4	AS SHOWN	6 x 6	4	(1)
D8-1	AS SHOWN	6 x 6	4	(1)

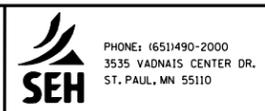


FOR INFORMATION ONLY

DESIGN TEAM			
DRAWN BY:	JJP		
DESIGNER:	JJP		
CHECKED BY:	MEK		
NO.	BY	DATE	REVISIONS

I hereby certify that this plan 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.

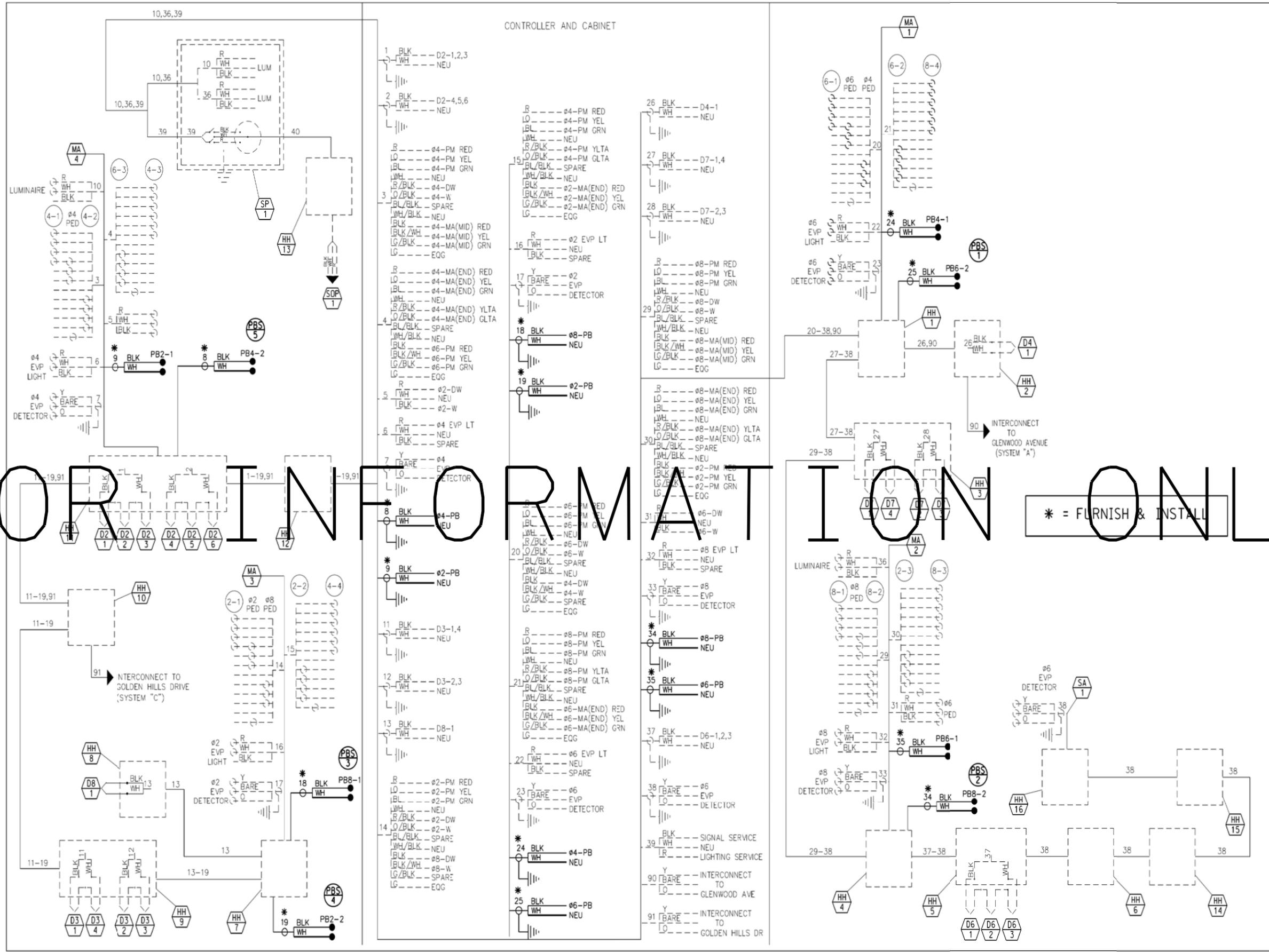
Certified By: *Michael E. Kotila* Lic. No. 19254  
 Licensed Professional Engineer  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019



**GOLDEN VALLEY BIKE LANES**

**AS-BUILTS**  
 LAUREL & XENIA

FILE NO.	39
GOLDV148501	
SGL 9 OF SGL10	47



FOR INFORMATION ONLY

\* = FURNISH & INSTALL

DESIGN TEAM			
DRAWN BY:	JJP		
DESIGNER:	JJP		
CHECKED BY:	MEK		
NO.	BY	DATE	REVISIONS

I hereby certify that this plan 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.

Certified By: *Michael E. Kotila* Lic. No. 19254  
 Licensed Professional Engineer  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019

PHONE: (651)490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110



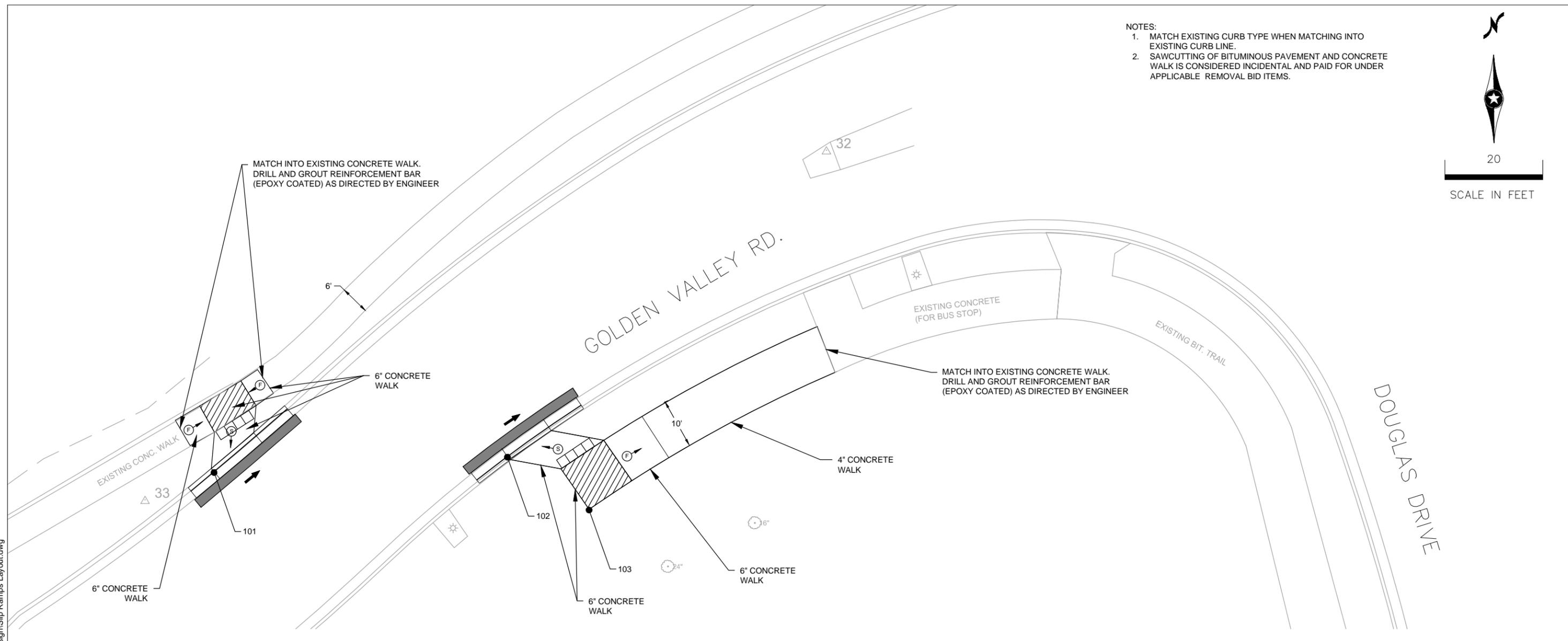
GOLDEN VALLEY  
BIKE LANES

AS-BUILTS

LAUREL & XENIA

FILE NO. GOLDV148501	40
SGL 10 OF SGLIO	47

- NOTES:
1. MATCH EXISTING CURB TYPE WHEN MATCHING INTO EXISTING CURB LINE.
  2. SAWCUTTING OF BITUMINOUS PAVEMENT AND CONCRETE WALK IS CONSIDERED INCIDENTAL AND PAID FOR UNDER APPLICABLE REMOVAL BID ITEMS.



SLIP RAMP POINTS				
POINT #	RAW DESCRIPTION	ELEVATION	NORTHING	EASTING
101	SLIP RAMP 0° CURB AT GUTTER	881.49	172902.9810	505712.0424
102	SLIP RAMP 0° CURB AT GUTTER	881.25	172906.2286	505771.8393
103	SLIP RAMP 0° CURB AT GUTTER	882.02	172895.3545	505788.6192

CONTROL POINTS				
POINT #	RAW DESCRIPTION	ELEVATION	NORTHING	EASTING
32	CPT	881.36	172968.5170	505837.1040
33	CPT	881.80	172897.2860	505697.9430

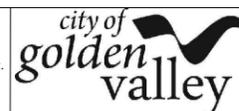
LEGEND	
XXX-●	CONTROL POINTS AT GUTTER FLOW LINE
□□□	TRUNCATED DOMES (SEE STANDARD PLATE 7038)
═══	CONSTRUCT CONCRETE CURB & GUTTER
▒▒▒	BITUMINOUS PATCH
X"	CURB HEIGHT
▨▨▨	LANDING AREA - 4' X 4' MIN. DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS
Ⓢ	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
ⓕ	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
→	DRAINAGE FLOW ARROW

\\smp1\Projects\F\JG\GoldV\1485015-final-dsgn\51-drawings\90-GISData\DWG\Working\Slip Ramp Design\Slip Ramps Layout.dwg

DESIGN TEAM			
DRAWN BY:	JRM		
DESIGNER:	JRM		
CHECKED BY:	MEK		
NO.	BY	DATE	REVISIONS

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Certified By: Michael E. Kotila Lic. No. 19254  
 Licensed Professional Engineer  
 Printed Name: Michael E. Kotila Date: 08/01/19

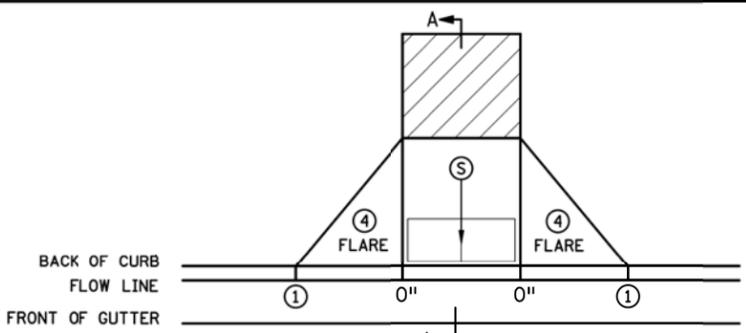


GOLDEN VALLEY  
BIKE LANES

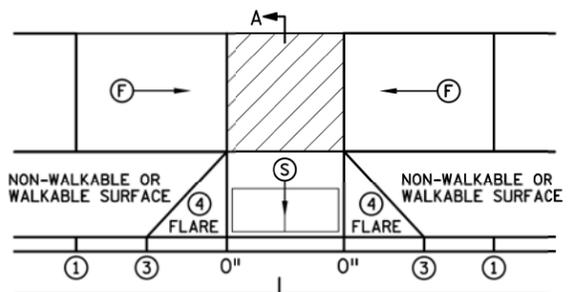
SLIP RAMP DETAILS

FILE NO.	41
GOLDV148501	
GM1	47
OF GM7	

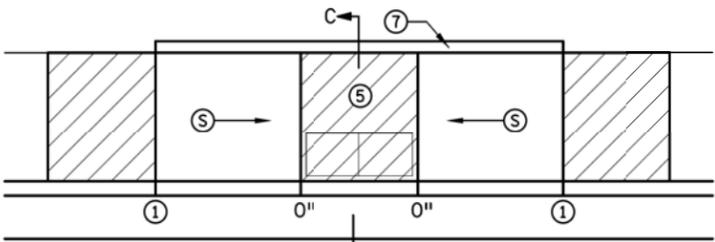
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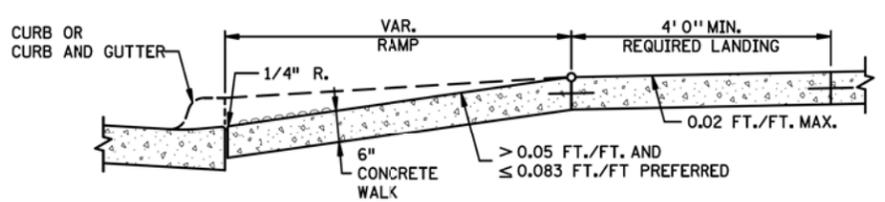
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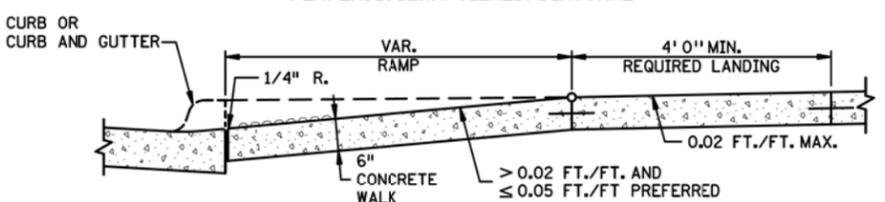
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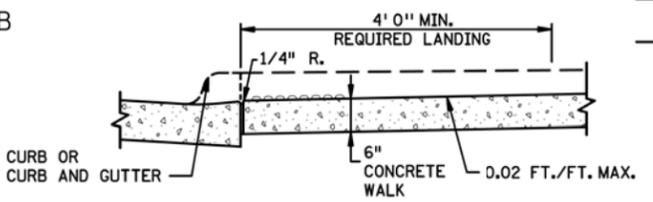
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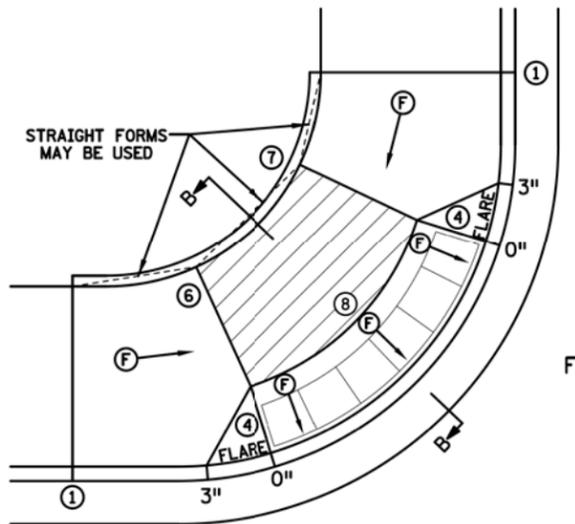
**SECTION A-A  
PERPENDICULAR/TIERED/DIAGONAL**



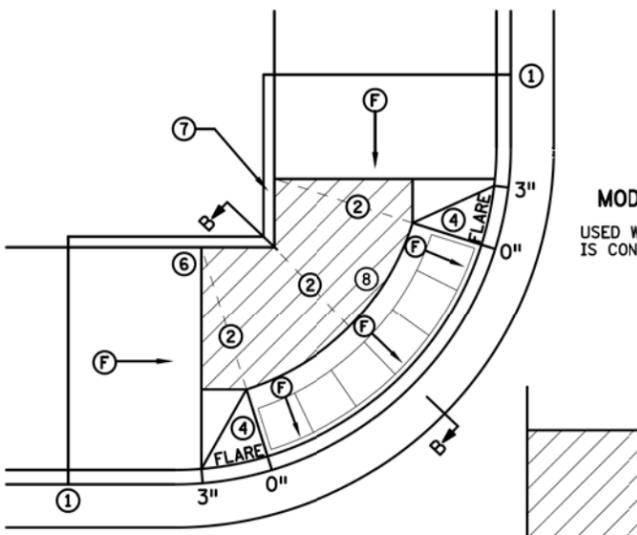
**SECTION B-B  
FAN**



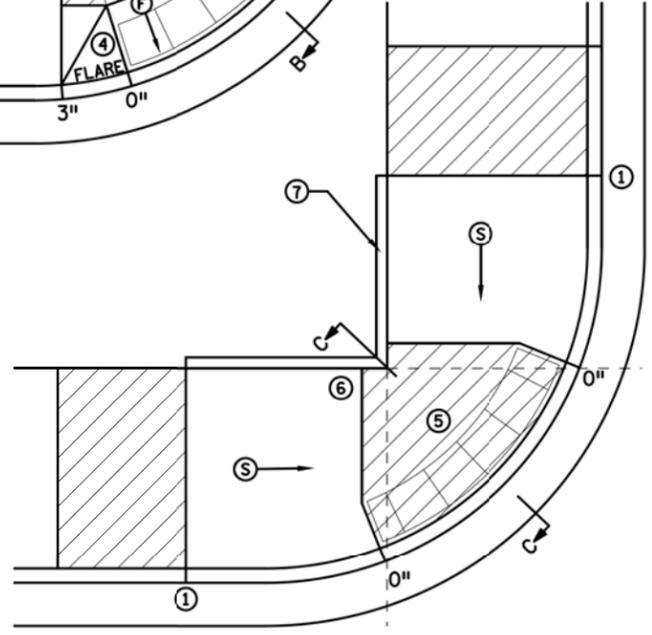
**SECTION C-C  
PARALLEL/DEPRESSED CORNER**



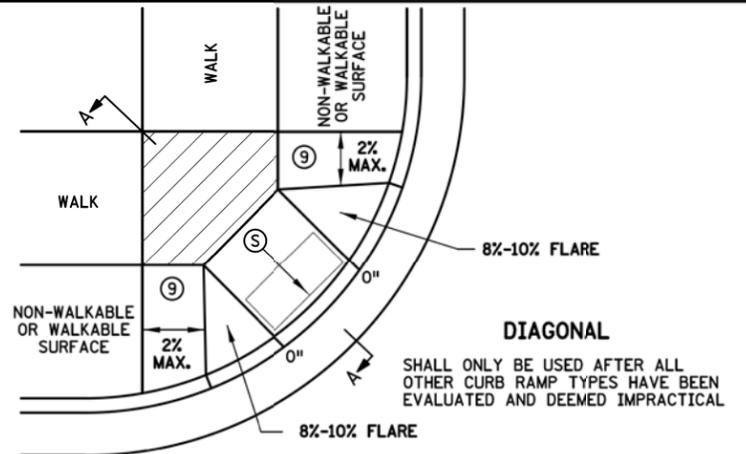
**FAN 10**



**MODIFIED FAN 10  
USED WHEN RIGHT-OF-WAY IS CONSTRAINED**



**DEPRESSED CORNER**



**DIAGONAL**

SHALL ONLY BE USED AFTER ALL OTHER CURB RAMP TYPES HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL

**NOTES:**

- LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE (PAR) CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE GREATER THAN 2%.
  - INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE, ONLY APPLICABLE WHEN THE INITIAL RAMP RUNNING SLOPE IS OVER 5.0%.
  - SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30' OF VERTICAL RISE WHEN THE LONGITUDINAL RUNNING SLOPE IS GREATER THAN 5.0%.
  - CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PAR. 1/4" DEEP VISUAL JOINTS SHALL BE USED AT THE TOPS OF CONCRETE FLARES ADJACENT TO WALKABLE SURFACES. ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL, THUS BOTH SIDES OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH. (EXCEPT AS STATED IN 6 BELOW.)
  - TO ENSURE INITIAL RAMPS AND INITIAL LANDINGS ARE PROPERLY CONSTRUCTED, LANDINGS SHALL BE CAST SEPARATELY, FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 6 AND THE ADA SPECIAL PROVISIONS - PROSECUTION OF WORK (ADA).
  - TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.
  - WHEN THE BOULEVARD IS 4' WIDE OR LESS, THE TOP OF CURB TAPER SHALL MATCH THE RAMP SLOPES TO REDUCE NEGATIVE BOULEVARD SLOPES FROM THE TOP BACK OF CURB TO THE PAR.
  - ALL RAMP TYPES SHOULD HAVE A MINIMUM 3' LONG RAMP LENGTH.
  - 4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER ENTIRE WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK. DETECTABLE WARNING SHOULD BE 6" LESS THAN THE PAR/TRAIL WIDTH. ARC LENGTH OF RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.
  - RECTANGULAR DETECTABLE WARNINGS SHALL BE SETBACK 3" FROM THE BACK OF CURB. RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB.
- 1 MATCH FULL HEIGHT CURB.
  - 2 4' MINIMUM DEPTH LANDING REQUIRED ACROSS TOP OF RAMP.
  - 3 3" HIGH CURB WHEN USING A 3' LONG RAMP, 4" HIGH CURB WHEN USING A 4' LONG RAMP.
  - 4 SEE SHEET 4 OF 6, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS, WHEN INITIAL LANDING IS AT FULL CURB HEIGHT.
  - 5 DETECTABLE WARNINGS MAY BE PART OF THE 4' X 4' MIN. LANDING AREA IF IT IS NOT FEASIBLE TO CONSTRUCT THE LANDING OUTSIDE OF THE DETECTABLE WARNING AREA.
  - 6 THE GRADE BREAK SHALL BE PERPENDICULAR TO THE BACK OF WALK. THIS WILL ENSURE THAT THE GRADE BREAK IS PERPENDICULAR TO THE DIRECTION OF TRAVEL. (TYPICAL FOR ALL)
  - 7 WHEN ADJACENT TO GRASS, GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.
  - 8 A 7' MIN TOP RADIUS GRADE BREAK REQUIRED TO BE CONSTRUCTIBLE.
  - 9 PAVE FULL WALK WIDTH.
  - 10 "S" SLOPES ON FANS SHALL ONLY BE USED WHEN ALL OTHER FEASIBLE OPTIONS HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL.

**LEGEND**

THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.

- (S) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.
- (F) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.
- LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PAR.
- X" CURB HEIGHT

REVISIONS:  
 APPROVED: JANUARY 23, 2017  
 OPERATIONS ENGINEER

REVISED:  
 APPROVED: 1-23-2017  
 STATE DESIGN ENGINEER

**PEDESTRIAN CURB RAMP DETAILS**

**STANDARD PLAN 5-297.250**

**1 OF 6**

DESIGN TEAM	NO.	BY	DATE	REVISIONS
DRAWN BY: JJP				
DESIGNER: JJP				
CHECKED BY: MEK				

I hereby certify that this plan 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.

Certified By: *Michael E. Kotila*  
 Licensed Professional Engineer Lic. No. 19254  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019

SEH  
 PHONE: (651)490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110

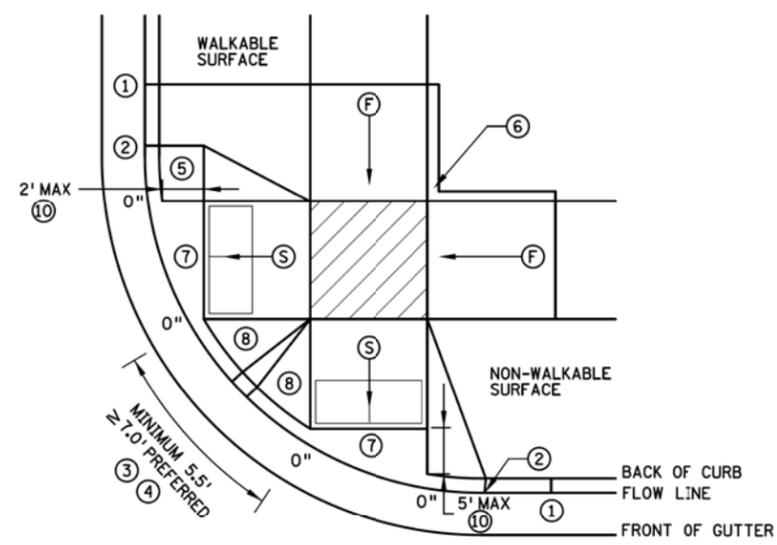
city of golden valley

GOLDEN VALLEY  
 BIKE LANES

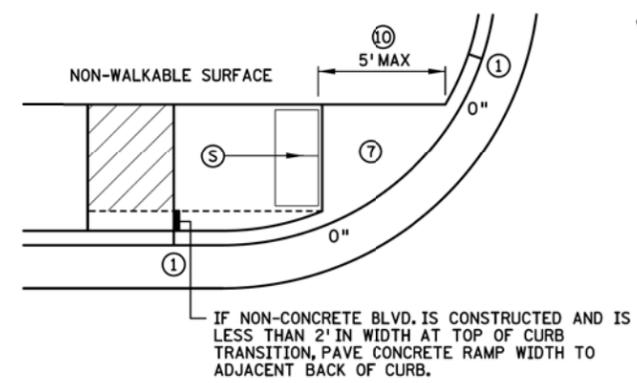
SLIP RAMP PLAN  
 DETAILS

FILE NO. 42  
 GOLDV148501  
 GM2 OF CM7  
 47

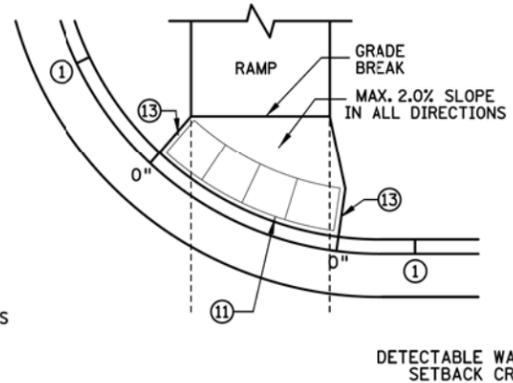
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 DESIGNER: JJP  
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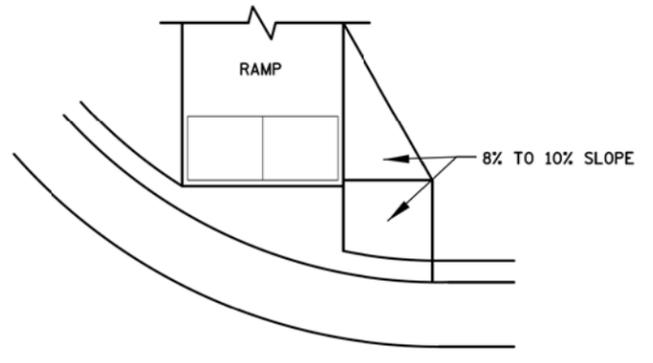
**COMBINED DIRECTIONAL ⑨**



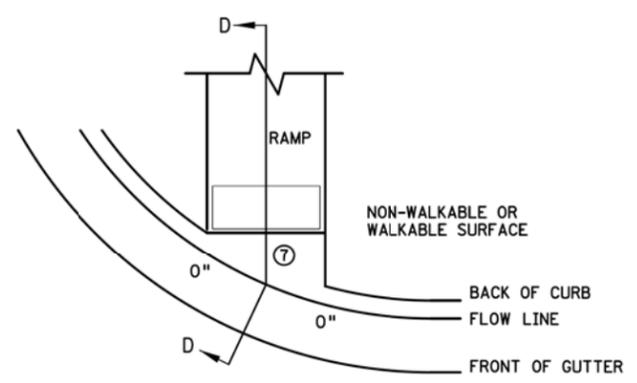
**STANDARD ONE-WAY DIRECTIONAL ⑨**



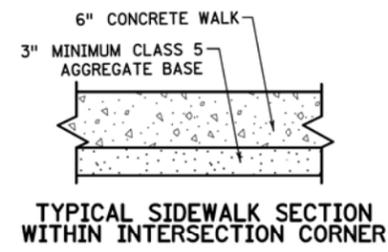
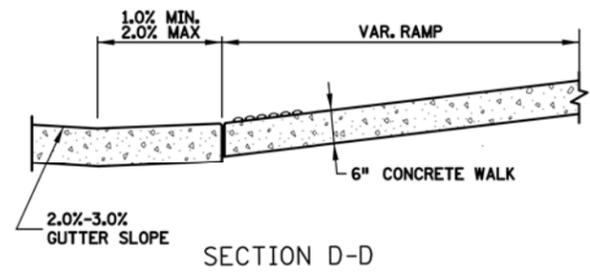
**ONE-WAY DIRECTIONAL WITH DETECTABLE WARNING AT BACK OF CURB**



**DIRECTIONAL RAMP WALKABLE FLARE**



**CURB FOR DIRECTIONAL RAMPS ⑭**



**TYPICAL SIDEWALK SECTION WITHIN INTERSECTION CORNER**

**NOTES:**

- LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE (PAR) CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE.
- INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE, ONLY APPLICABLE WHEN THE INITIAL RAMP RUNNING SLOPE IS OVER 5.0%.
- SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30" OF VERTICAL RISE WHEN THE LONGITUDINAL SLOPE IS GREATER THAN 5.0%.
- CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PAR. 1/4" DEEP VISUAL JOINTS SHALL BE USED AT THE TOP GRADE BREAK OF CONCRETE FLARES ADJACENT TO WALKABLE SURFACES.
- ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL. THUS BOTH SIDES OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH.
- TO ENSURE INITIAL RAMPS AND INITIAL LANDINGS ARE PROPERLY CONSTRUCTED, LANDINGS SHALL BE CAST SEPARATELY. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 6 AND THE ADA SPECIAL PROVISION (PROSECUTION OF WORK).
- TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.
- WHEN THE BOULEVARD IS 4' WIDE OR LESS, THE TOP OF CURB TAPER SHALL MATCH THE RAMP SLOPES TO REDUCE NEGATIVE BOULEVARD SLOPES FROM THE TOP BACK OF CURB TO THE PAR.
- ALL RAMP TYPES SHOULD HAVE A MINIMUM 3' LONG RAMP LENGTH.
- 4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER ENTIRE WIDTH OF SHARED-USE PATH AND THE ENTIRE PAR WIDTH OF THE WALK. DETECTABLE WARNING SHOULD BE 6" LESS THAN THE PAR/PATH WIDTH. ARC LENGTH OF RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.
- RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB. SEE NOTES ⑩ & ⑪ FOR INFORMATION REGARDING RECTANGULAR DETECTABLE WARNING PLACEMENT.
- ① MATCH FULL CURB HEIGHT.
- ② 3" HIGH CURB WHEN USING A 3' LONG RAMP  
4" HIGH CURB WHEN USING A 4' LONG RAMP.
- ③ 3" MINIMUM CURB HEIGHT (5.5' MIN. DISTANCE REQUIRED BETWEEN DOMES)  
4" PREFERRED (7' MIN. DISTANCE REQUIRED BETWEEN DOMES).
- ④ THE "BUMP" IN BETWEEN THE RAMPS SHOULD NOT BE IN THE PATH OF TRAVEL FOR COMBINED DIRECTIONAL RAMPS. IF THIS OCCURS MODIFY THE RAMP LOCATION OR SWITCH RAMP TO A FAN/DEPRESSED CORNER.
- ⑤ WHEN USING CONCRETE PAVED FLARES ON THE OUTSIDE OF DIRECTIONAL RAMPS, AND ADJACENT TO A WALKABLE SURFACE, DIRECTIONAL RAMP FLARES SHOULD BE USED. SEE THE DETAIL ON THIS SHEET.
- ⑥ GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.
- ⑦ MAX. 2.0% SLOPE IN ALL DIRECTIONS IN FRONT OF GRADE BREAK AND DRAIN TO FLOW LINE. SHALL BE CONSTRUCTED INTEGRAL WITH CURB AND GUTTER.
- ⑧ 8% TO 10% WALKABLE FLARE.
- ⑨ PLACE DOMES AT THE BACK OF CURB WHEN ALLOWABLE SETBACK CRITERIA IS EXCEEDED.
- ⑩ FRONT EDGE OF DETECTABLE WARNING SHALL BE SET BACK 2' MAXIMUM WHEN ADJACENT TO WALKABLE SURFACE, AND 5' MAXIMUM WHEN ADJACENT TO NON-WALKABLE SURFACE WITH ONE CORNER SET 3" FROM BACK OF CURB. A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD MISTAKENLY BE TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.
- ⑪ RECTANGULAR DETECTABLE WARNINGS MAY BE SETBACK UP TO 9" FROM THE BACK OF CURB WITH CORNERS SET 3" FROM BACK OF CURB. IF 9" SETBACK IS EXCEEDED USE RADIAL DETECTABLE WARNINGS.
- ⑫ FOR DIRECTIONAL RAMPS WITH THE DETECTABLE WARNINGS PLACED AT THE BACK OF CURB, THE DETECTABLE WARNINGS SHALL COVER THE ENTIRE WIDTH OF THE WALK/PATH. THIS ENSURES A DETECTABLE EDGE AND HELPS ELIMINATE THE CURB TAPER OBSTRUCTING THE PATH OF PEDESTRIAN TRAVEL.
- ⑬ THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE BACK OF CURB. MAINTAIN 3" BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.
- ⑭ TO BE USED FOR ALL DIRECTIONAL RAMPS, EXCEPT WHERE DOMES ARE PLACED ALONG THE BACK OF CURB.

LEGEND	
THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.	
Ⓢ	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.
Ⓣ	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.
▨	LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PAR.
X"	CURB HEIGHT

REVISION:	
APPROVED: JANUARY 23, 2017	
OPERATIONS ENGINEER	

	REVISED:	
	APPROVED:	1-23-2017
	STATE DESIGN ENGINEER	

PEDESTRIAN CURB RAMP DETAILS	
STANDARD PLAN 5-297.250	2 OF 6

DESIGN TEAM				
DRAWN BY:	JJP			
DESIGNER:	JJP			
CHECKED BY:	MEK			
NO.	BY	DATE	REVISIONS	

I hereby certify that this plan 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.

Certified By: *Michael E. Kotila* Lic. No. 19254  
 Licensed Professional Engineer  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019

PHONE: (651)490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110

city of  

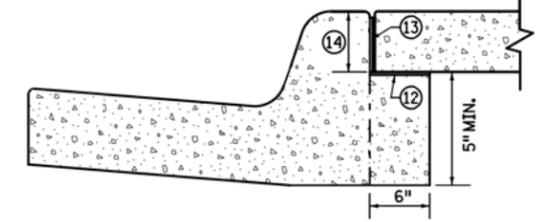
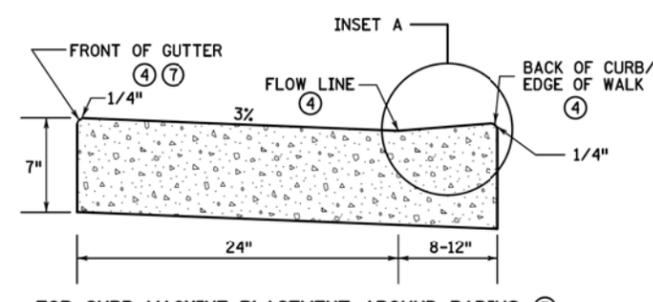
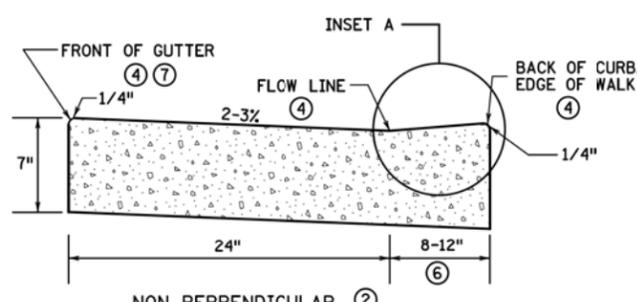
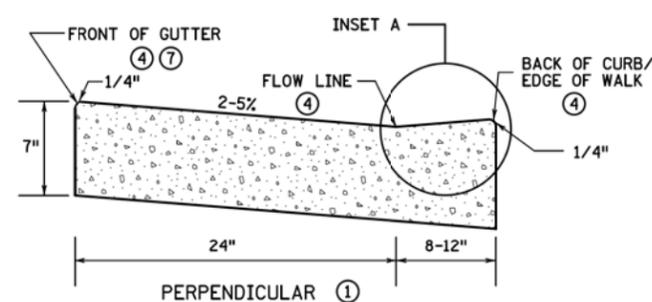
 GOLDEN VALLEY  
 BIKE LANES

GOLDEN VALLEY  
 BIKE LANES

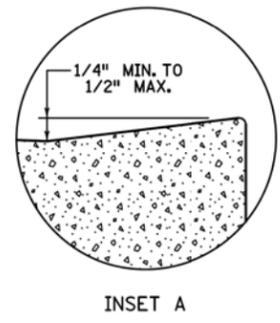
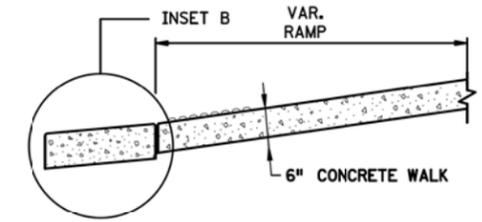
SLIP RAMP PLAN  
 DETAILS

FILE NO.	43
GOLDV148501	
GM3	
OF GM7	47

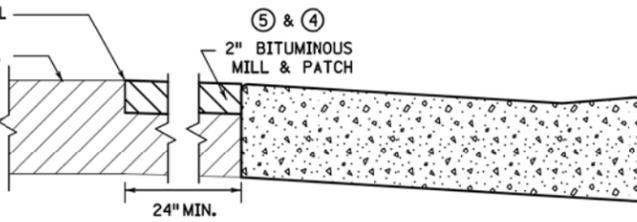
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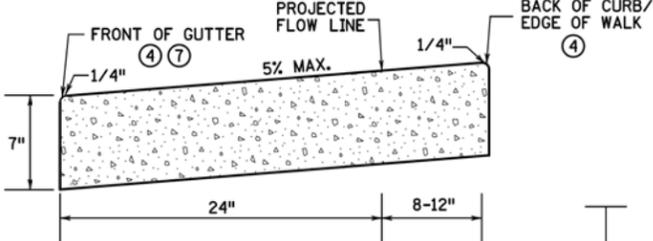
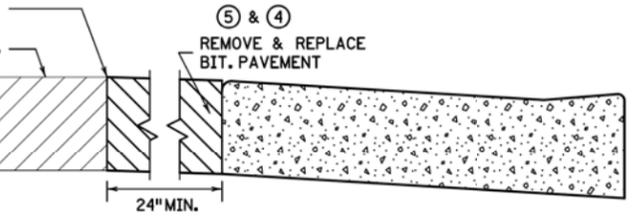
PEDESTRIAN ACCESS ROUTE CURB & GUTTER DETAIL



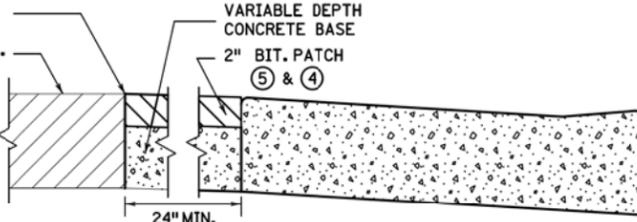
MILL VERTICAL EDGE EXISTING BIT. PAVEMENT



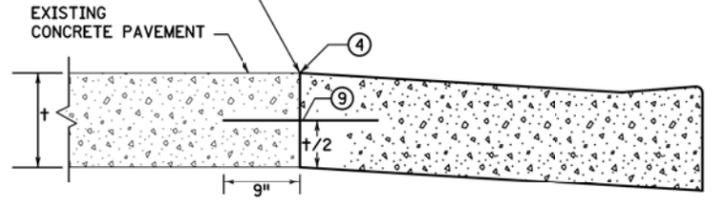
SAWCUT BIT. PAVEMENT EXISTING BIT. PAVEMENT



SAWCUT BIT. PAVEMENT EXISTING BIT. PAVEMENT



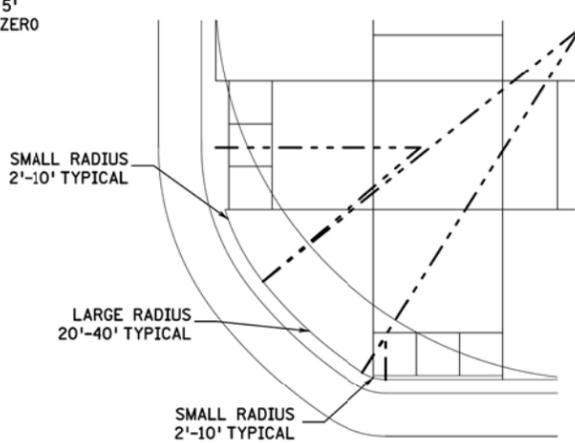
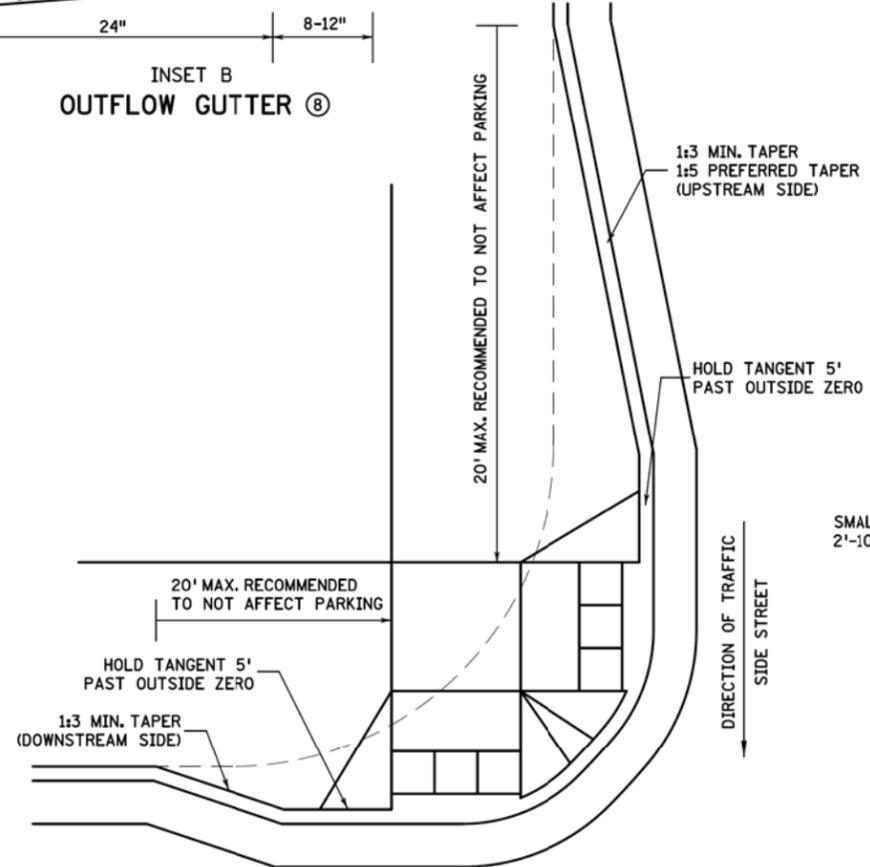
SAWCUT CONCRETE PAVEMENT EXISTING CONCRETE PAVEMENT



ONLY ALLOWED PER ENGINEER'S APPROVAL

PAVEMENT TREATMENT OPTIONS IN FRONT OF CURB & GUTTER

FOR USE ON CURB RAMP RETROFITS



COMBINED DIRECTIONAL (COMPOUND RADIUS)

NOTES:

- POSITIVE FLOW LINE DRAINAGE SHALL BE MAINTAINED THROUGH THE PEDESTRIAN ACCESS ROUTE (PAR) AT A 2% MAXIMUM. NO PONDING SHALL BE PRESENT IN THE PAR.
- ANY VERTICAL LIP THAT OCCURS AT THE FLOW LINE SHALL NOT BE GREATER THAN 1/4 INCH.
- 1 FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: PERPENDICULAR, TIERED PERPENDICULAR, PARALLEL, AND DIAGONAL RAMPS.
- 2 FOR USE AT CURB RAMPS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED NON PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: FANS & DEPRESSED CORNERS.
- 3 BEGIN GUTTER SLOPE TRANSITION 10' OUTSIDE OF ALL CURB RAMPS.
- 4 THERE SHALL BE NO VERTICAL DISCONTINUITIES GREATER THAN 1/4".
- 5 ELEVATION CHANGE TAKES PLACE FROM THE EXISTING TO NEW FRONT OF GUTTER. PATCH IS USED TO MATCH THE NEW GUTTER FACE INTO THE EXISTING ROADWAY.
- 6 VARIABLE WIDTH FOR DIRECTIONAL CURB APPLICATIONS. SEE SHEET 2 FOR DIRECTIONAL CURB SLOPE REQUIREMENTS.
- 7 TOP FRONT OF GUTTER SHALL BE CONSTRUCTED FLUSH WITH PROPOSED ADJACENT PAVEMENT ELEVATION. TOP 1.5" OF THE GUTTER FACE MUST BE A FORMED EDGE. PAR GUTTER SHALL NOT BE OVERLAID.
- 8 SHOULD BE USED AT VERTICALLY CONSTRAINED AREAS WHEN AT A DRAINAGE HIGH POINT OR SUPER ELEVATED ROADWAY SEGMENTS.
- 9 DRILL AND GROUT NO. 4 EPOXY-COATED 18" LONG TIE BARS AT 30" CENTER TO CENTER INTO EXISTING CONCRETE PAVEMENT 1' MINIMUM FROM ALL JOINTS.
- 10 HELPS PROVIDE TWO SEPARATE RAMPS, REDUCES THE DOME SETBACK LENGTH AND MINIMIZES DIRECTIONAL CURB. THIS RADIUS DESIGN CLOSELY FOLLOWS THE TURNING VEHICLE PATH WHILE OPTIMIZING CURB RAMP LENGTH.
- 11 CURB EXTENSIONS SHOULD BE USED IN VERTICALLY CONSTRAINED AREAS, USUALLY IN DOWNTOWN ROADWAY SEGMENTS WHERE ON-STREET PARKING IS AVAILABLE. CURB EXTENSIONS SHOULD BE CONSIDERED FOR APS INTERSECTIONS WHERE SPACE IS LIMITED. PUSH BUTTONS MUST MEET APS CRITERIA AS DESCRIBED IN THE PUSH BUTTON LOCATION DETAIL SHEET.
- 12 PLACE BOND BREAKER BETWEEN WALK AND TOP OF SILL.
- 13 1/2" PREFORMED JOINT FILLER PER MNDOT SPEC. 3702.
- 14 DIMENSION TO BE SAME AS SIDEWALK THICKNESS, 4" MIN.

REVISION:	
APPROVED: JANUARY 23, 2017	
OPERATIONS ENGINEER	



REVISOR: *Rom*  
APPROVED: 1-23-2017  
STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS  
STANDARD PLAN 5-297.250  
3 OF 6

DESIGN TEAM				
DRAWN BY:	JJP			
DESIGNER:	JJP			
CHECKED BY:	MEK			
NO.	BY	DATE	REVISIONS	

I hereby certify that this plan 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.  
Certified By: *Michael E. Kotila* Lic. No. 19254  
Printed Name: MICHAEL E. KOTILA Date: 8/1/2019

SEH  
PHONE: (651)490-2000  
3535 VADNAIS CENTER DR.  
ST. PAUL, MN 55110

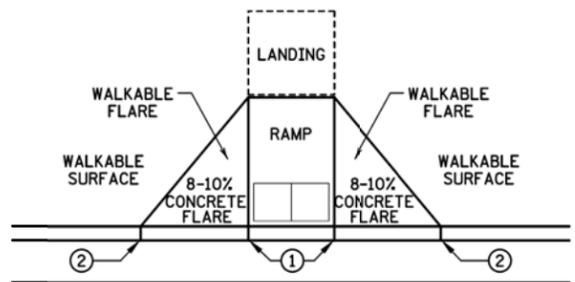


GOLDEN VALLEY  
BIKE LANES

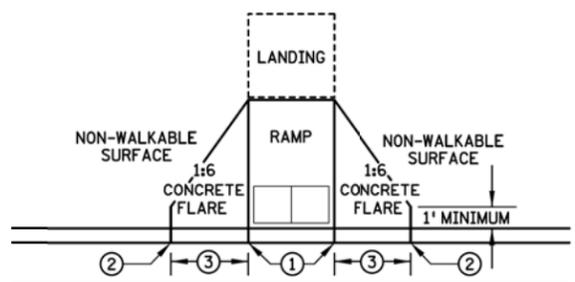
SLIP RAMP PLAN  
DETAILS

FILE NO.	44
GOLDV148501	
GM4	
OF CM7	47

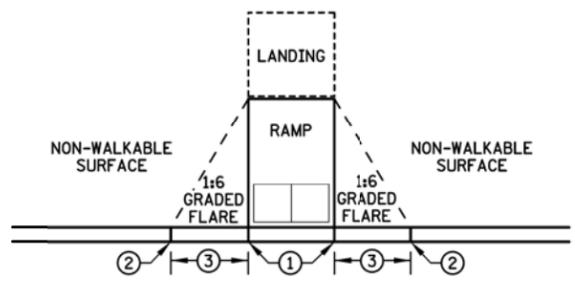
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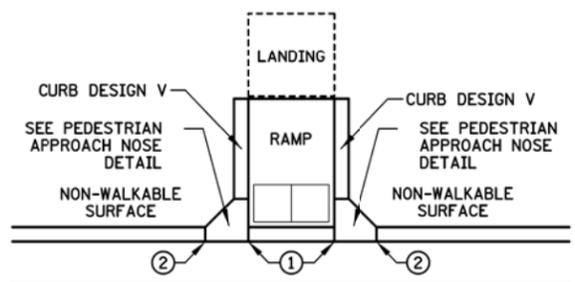
PAVED FLARES  
ADJACENT TO WALKABLE SURFACE



PAVED FLARES  
ADJACENT TO NON-WALKABLE SURFACE

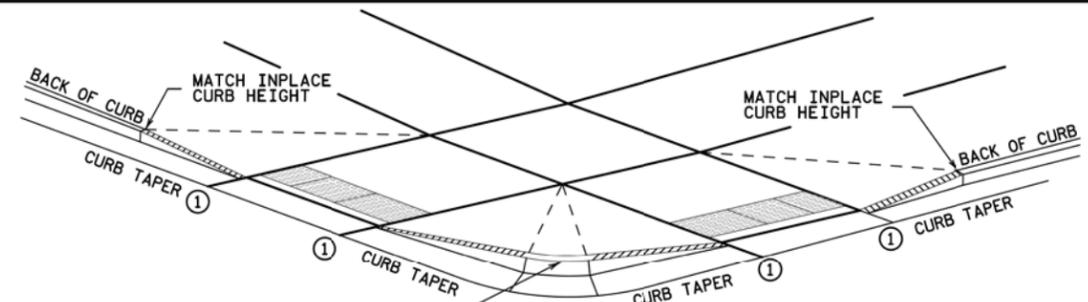


GRADED FLARES



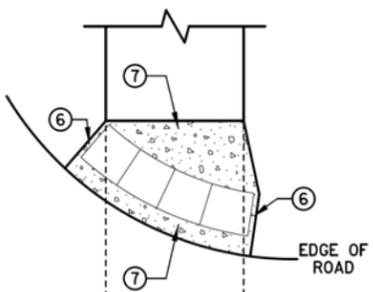
RETURNED CURB ⑤

TYPICAL SIDE TREATMENT OPTIONS ④ ⑪

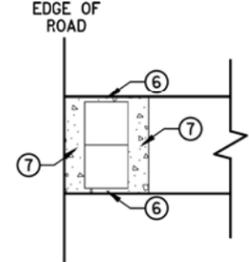


3" MINIMUM CURB HEIGHT, 4" PREFERRED  
(MEASURED AT FRONT FACE OF CURB)  
FOR A MIN. 6" LENGTH (MEASURED ALONG FLOW LINE)

DETECTABLE EDGE WITH ⑧  
CURB AND GUTTER

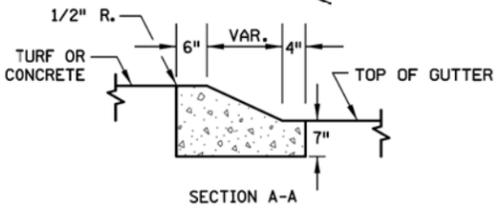
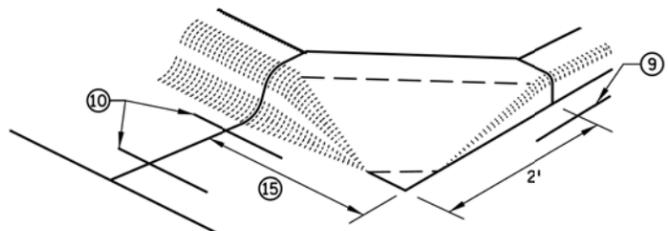


RADIAL DETECTABLE WARNING

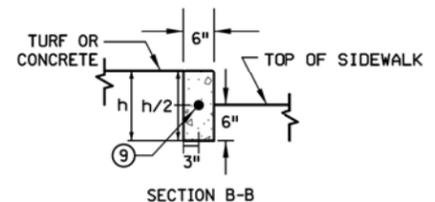


RECTANGULAR DETECTABLE WARNING

DETECTABLE EDGE WITHOUT CURB AND GUTTER

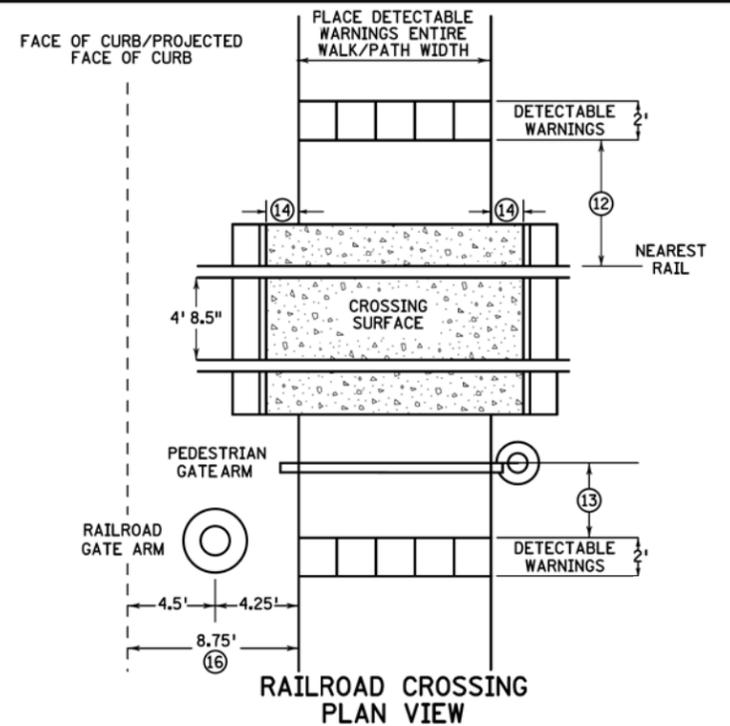


SECTION A-A



SECTION B-B

PEDESTRIAN APPROACH  
NOSE DETAIL  
(FOR RETURNED CURB  
SIDE TREATMENT)



RAILROAD CROSSING  
PLAN VIEW

- NOTES:  
 SEE STANDARD PLATE 7038 AND THIS SHEET FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.  
 A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD MISTAKENLY BE TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.  
 CONCRETE FLARE LENGTHS ADJACENT TO NON-WALKABLE SURFACES SHOULD BE LESS THAN 8' LONG MEASURED ALONG THE RAMP FROM THE BACK OF CURB.
- ① 0" CURB HEIGHT.
  - ② FULL CURB HEIGHT.
  - ③ 2' FOR 4" HIGH CURB AND 3' FOR 6" HIGH CURB.
  - ④ SIDE TREATMENTS ARE APPLICABLE TO ALL RAMP TYPES AND SHOULD BE IMPLEMENTED AS NEEDED AS FIELD CONDITIONS DICTATE. THE ENGINEER SHALL DETERMINE THE RAMP SIDE TREATMENTS BASED ON MAINTENANCE OF BOTH ROADWAY AND SIDEWALK, ADJACENT PROPERTY CONSIDERATIONS, AND MITIGATING CONSTRUCTION IMPACTS.
  - ⑤ TYPICALLY USED FOR MEDIANS AND ISLANDS.
  - ⑥ WHEN NO CONCRETE FLARES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE EDGE OF ROADWAY. MAINTAIN 3" MAX. BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.
  - ⑦ IF NO CURB AND GUTTER IS PLACED IN RURAL SECTIONS, DETECTABLE WARNINGS SHALL BE PLACED 1' FROM THE EDGE OF BITUMINOUS ROADWAY AND/OR BITUMINOUS SHARED-USE PATH TO PROVIDE VISUAL CONTRAST.
  - ⑧ ALL CONSTRUCTED CURBS MUST HAVE A CONTINUOUS DETECTABLE EDGE FOR THE VISUALLY IMPAIRED. THIS DETECTABLE EDGE REQUIRES DETECTABLE WARNINGS WHEREVER THERE IS ZERO-INCH HIGH CURB, CURB TAPERS ARE CONSIDERED A DETECTABLE EDGE WHEN THE TAPER STARTS WITHIN 3" OF THE EDGE OF THE DETECTABLE WARNINGS AND UNIFORMLY RISES TO A 3-INCH MINIMUM CURB HEIGHT. ANY CURB NOT PART OF A CURB TAPER AND LESS THAN 3 INCHES IN HEIGHT IS NOT CONSIDERED A DETECTABLE EDGE AND THEREFORE IS NOT COMPLIANT WITH ACCESSIBILITY STANDARDS.
  - ⑨ DRILL AND GROUT 1 - NO. 4 12" LONG REINFORCEMENT BAR (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE V CURB.
  - ⑩ DRILL AND GROUT 2 - NO. 4 12" LONG REINFORCEMENT BARS (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE CURB AND GUTTER.
  - ⑪ SIDE TREATMENT EXAMPLES SHOWN ARE WHEN THE INITIAL LANDING IS APPROXIMATELY LEVEL WITH THE FULL HEIGHT CURB (I.E. 6' LONG RAMP FOR 6" HIGH CURB). WHEN THE INITIAL LANDING IS MORE THAN 1" BELOW FULL HEIGHT CURB REFER TO SHEETS 1 & 2 TO MODIFY THE CURB HEIGHT TAPERS AND MAINTAIN POSITIVE BOULEVARD DRAINAGE.
  - ⑫ NEAREST EDGE OF DETECTABLE WARNING SURFACES SHALL BE PLACED 12' MINIMUM TO 15' MAXIMUM FROM THE NEAREST RAIL. FOR SKEWED RAILWAYS IN NO INSTANCE SHALL THE DETECTABLE WARNING BE CLOSER THAN 12' MEASURED PERPENDICULAR TO THE NEAREST RAIL.
  - ⑬ WHEN PEDESTRIAN GATES ARE PROVIDED, DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE SIDE OF THE GATES OPPOSITE THE RAIL, 2' FROM THE APPROACHING SIDE OF THE GATE ARM. THIS CRITERIA GOVERNS OVER NOTE ⑫.
  - ⑭ CROSSING SURFACE SHALL EXTEND 2' MINIMUM PAST THE OUTSIDE EDGE OF WALK OR SHARED-USE PATH.
  - ⑮ 3' FOR MEDIANS AND SPLITTER ISLANDS. NOSE CAN BE REDUCED TO 2' ON FREE RIGHT ISLANDS.
  - ⑯ SIDEWALK TO BE PLACED 8.75' MIN. FROM THE FACE OF CURB/PROJECTED FACE OF CURB. THIS ENSURES MIN. CLEARANCE BETWEEN THE SIDEWALK AND GATE ARM COUNTERWEIGHT SUPPORTS.

REVISION:	
APPROVED: JANUARY 23, 2017	
OPERATIONS ENGINEER	

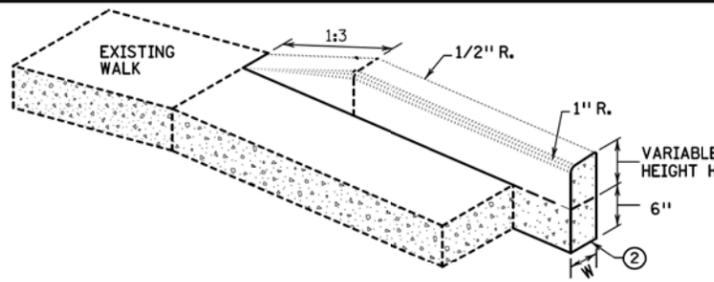
DESIGN TEAM				
DRAWN BY:	JJP			
DESIGNER:	JJP			
CHECKED BY:	MEK			
NO.	BY	DATE	REVISIONS	

I hereby certify that this plan 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.  
 Certified By: *Michael E. Kotila* Lic. No. 19254  
 Licensed Professional Engineer  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019

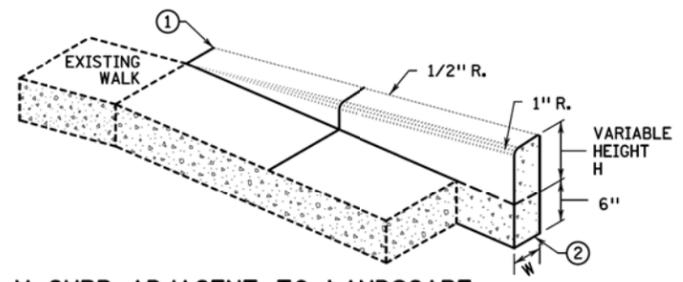
 STATE DESIGN ENGINEER 1-23-2017	PEDESTRIAN CURB RAMP DETAILS	
	STANDARD PLAN 5-297.250	4 OF 6

 PHONE: (651)490-2000 3535 VADNAIS CENTER DR. ST. PAUL, MN 55110	 GOLDEN VALLEY BIKE LANES	SLIP RAMP PLAN DETAILS	FILE NO. GOLDV148501 GM5 OF CM7	45 47
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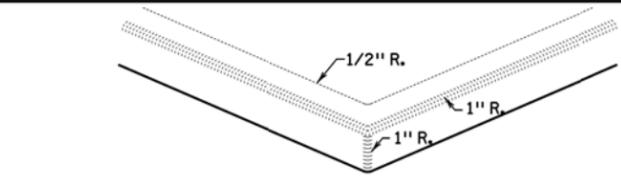
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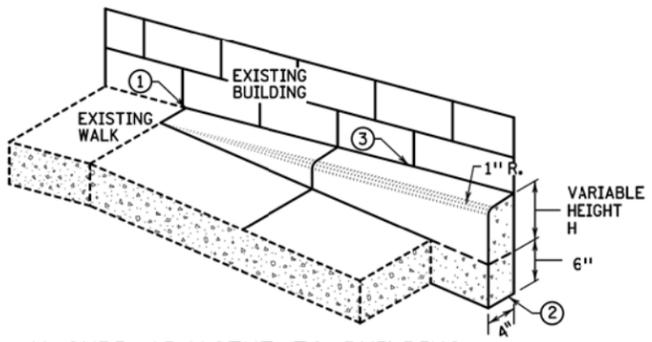
**V CURB ADJACENT TO LANDSCAPE**  
CURB WITHIN SIDEWALK LIMITS



**V CURB ADJACENT TO LANDSCAPE**  
CURB OUTSIDE SIDEWALK LIMITS

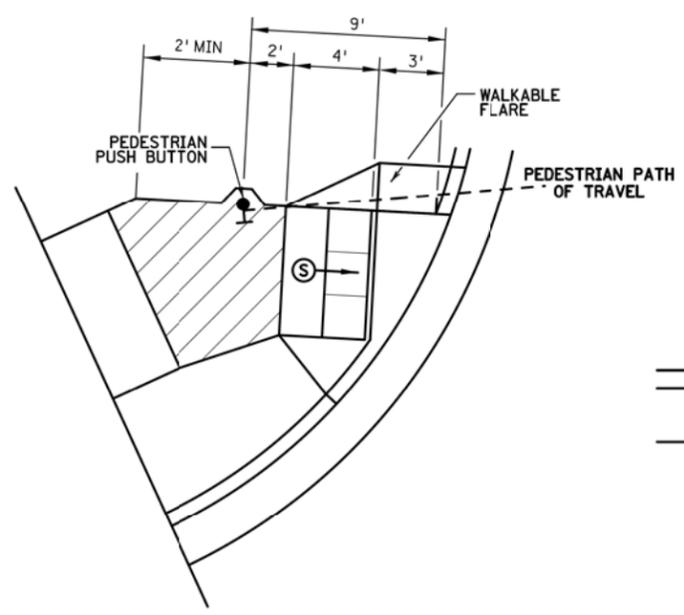


**V CURB INTERSECTION**

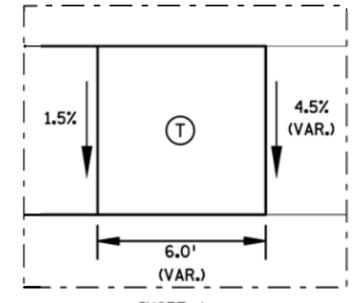
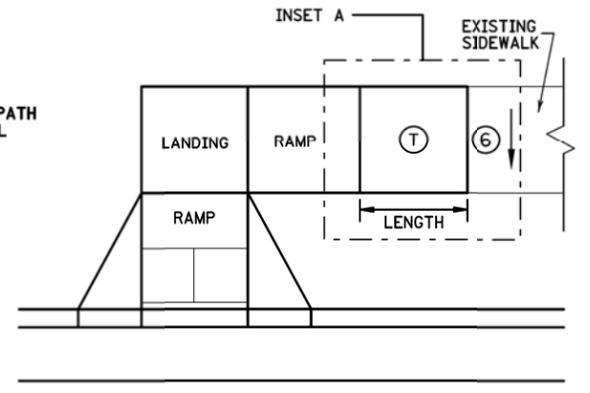


**V CURB ADJACENT TO BUILDING OR BARRIER**

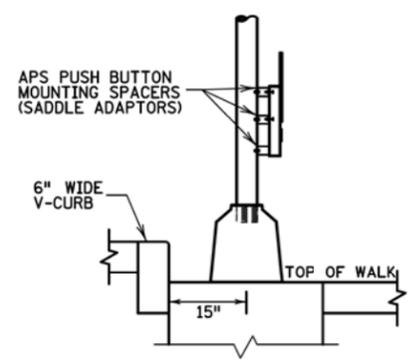
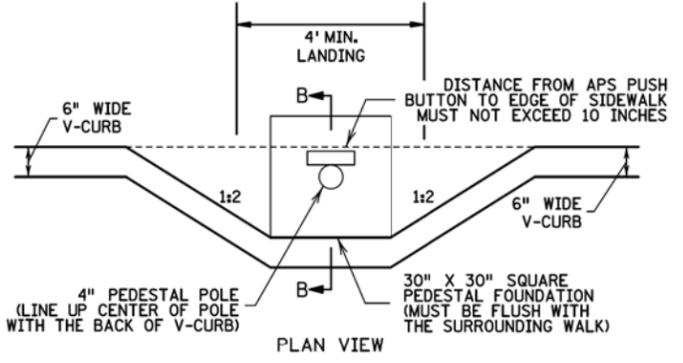
CONCRETE CURB DESIGN V	
CURB HEIGHT H	CURB WIDTH W
< 6"	4"
≥ 6"	6"



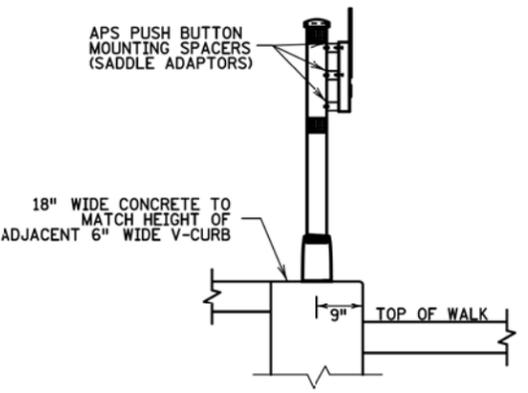
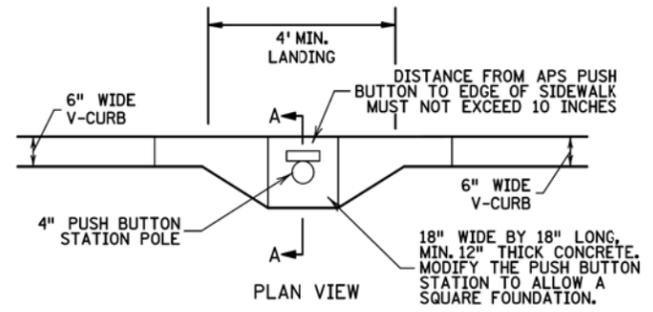
**SEMI-DIRECTIONAL RAMP (3,4,9)**  
3' DOME SETBACK, 4' LONG RAMP AND PUSH BUTTON 9' FROM THE BACK OF CURB  
PRIMARYLY USED FOR APS APPLICATIONS WHERE THE PAR DOES NOT CONTINUE PAST THE PUSH BUTTON (DEAD-END SIDEWALK)



**TRANSITION PANEL ④ ⑤**



**SIGNAL PEDESTAL & PUSH BUTTON (V-CURB)**



**PUSH BUTTON STATION (V-CURB)**

**NOTES:**

- A WALKABLE FLARE IS AN 8-10% CONCRETE FLARE THAT IS REQUIRED WHEN THE FLARE IS ADJACENT TO A WALKABLE SURFACE, OR WHEN THE PEDESTRIAN PATH OF TRAVEL OF A PUSH BUTTON TRAVERSES THE FLARE.
- ALL V CURB CONTRACTION JOINTS SHALL MATCH CONCRETE WALK JOINTS.
- WHERE RIGHT-OF-WAY ALLOWS, USE OF V CURB SHOULD BE MINIMIZED. GRADING ADJACENT TURF OR SLOPING ADJACENT PAVEMENT IS PREFERRED.
- V CURB SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS.
- V CURB NEXT TO BUILDING SHALL BE A 4" WIDTH AND SHALL MATCH PREVIOUS TOP OF SIDEWALK ELEVATIONS.
- ① END TAPERS AT TRANSITION SECTION SHALL MATCH INPLACE SIDEWALK GRADES.
- ② ALL V CURB SHALL MATCH BOTTOM OF ADJACENT WALK.
- ③ EDGE BETWEEN NEW V CURB AND INPLACE STRUCTURE SHALL BE SEALED AND BOND BREAKER SHALL BE USED BETWEEN EXISTING STRUCTURE AND PLACED V-CURB.
- ④ THE MAX. RATE OF CROSS SLOPE TRANSITIONING IS 1' LINEAR FOOT OF SIDEWALK PER HALF PERCENT CROSS SLOPE. WHEN PAR WIDTH IS GREATER THAN 6' OR THE RUNNING SLOPE IS GREATER THAN 5%, DOUBLE THE CALCULATED TRANSITION LENGTH.
- ⑤ TRANSITION PANELS ARE TO ONLY BE USED AFTER THE RAMP, OR IF NEEDED, LANDING ARE AT THE FULL CURB HEIGHT (TYPICAL SECTION).
- ⑥ EXISTING CROSS SLOPE GREATER THAN 2.0%.

**LEGEND**

- ⑤ THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT, IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.
- ⑤ INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.
- ④ LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.
- ① TRANSITION PANEL(S) - TO BE USED FOR TRANSITIONING THE CROSS-SLOPE OF A RAMP TO THE EXISTING WALK CROSS-SLOPE. RATE OF TRANSITION SHOULD BE 0.5% PER 1 LINEAR FOOT OF WALK. SEE THIS SHEET FOR ADDITIONAL INFORMATION.

REVISIONS:	
APPROVED: JANUARY 23, 2017	
OPERATIONS ENGINEER	

DESIGN TEAM	NO.	BY	DATE	REVISIONS
DRAWN BY: JJP				
DESIGNER: JJP				
CHECKED BY: MEK				

I hereby certify that this plan 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.  
 Certified By: *Michael E. Kotila* Lic. No. 19254  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019



REVISOR: *Rom Sh...*  
 APPROVED: 1-23-2017  
 STATE DESIGN ENGINEER

**PEDESTRIAN CURB RAMP DETAILS**  
 STANDARD PLAN 5-297.250 5 OF 6

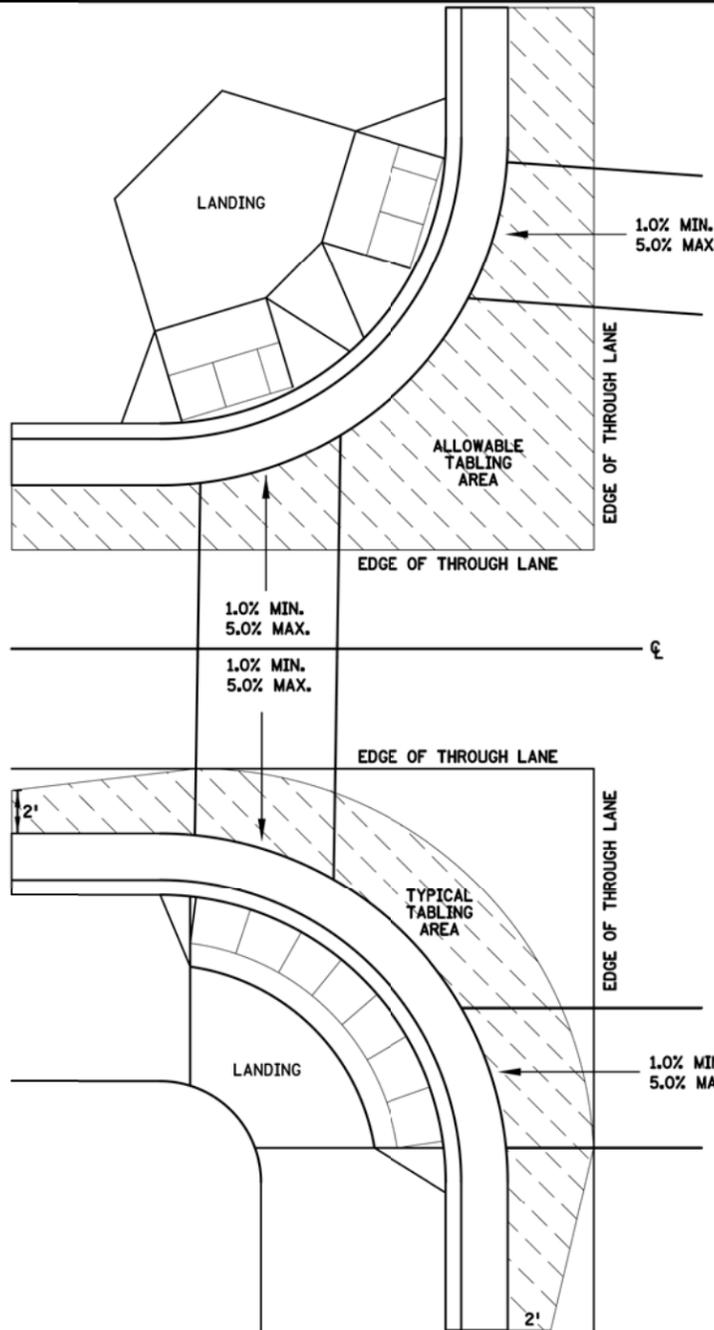


GOLDEN VALLEY  
BIKE LANES

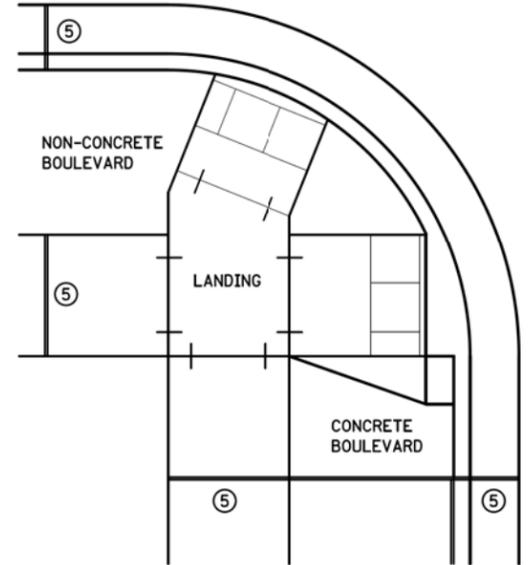
SLIP RAMP PLAN  
DETAILS

FILE NO. 46  
GOLDV148501  
CM6 OF CM7  
47

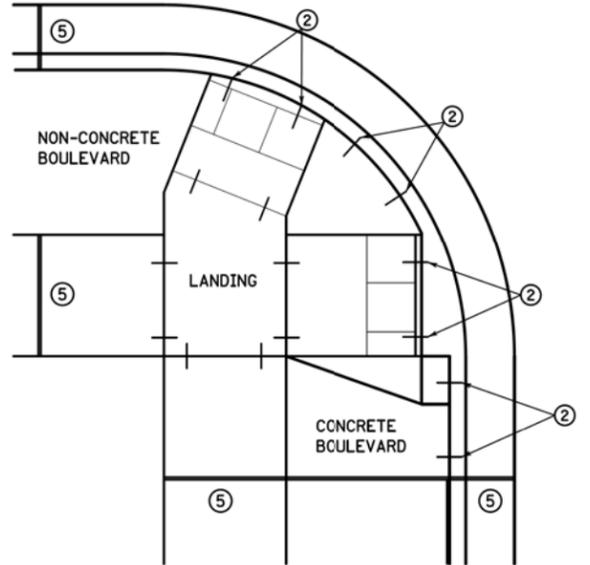
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 DESIGN TEAM  
 DRAWN BY: JJP  
 DESIGNER: JJP  
 CHECKED BY: MEK  
 NO. BY DATE REVISIONS  
 9:57:46 AM  
 8/1/2019  
 car-vidson



**CURB LINE AND ROAD CROSSING ADJUSTMENTS**



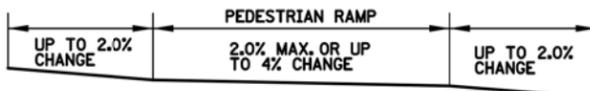
**EXPANSION MATERIAL PLACEMENT FOR CONCRETE AND BITUMINOUS ROADWAYS**



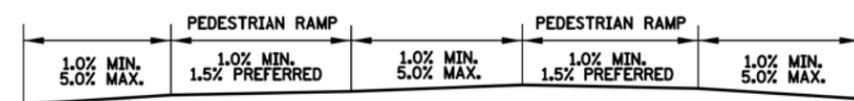
**OPTIONAL CURB LINE REINFORCEMENT PLACEMENT ON BITUMINOUS ROADWAYS**



**FLOW LINE PROFILE "TABLE" - TWIN PERPENDICULARS**



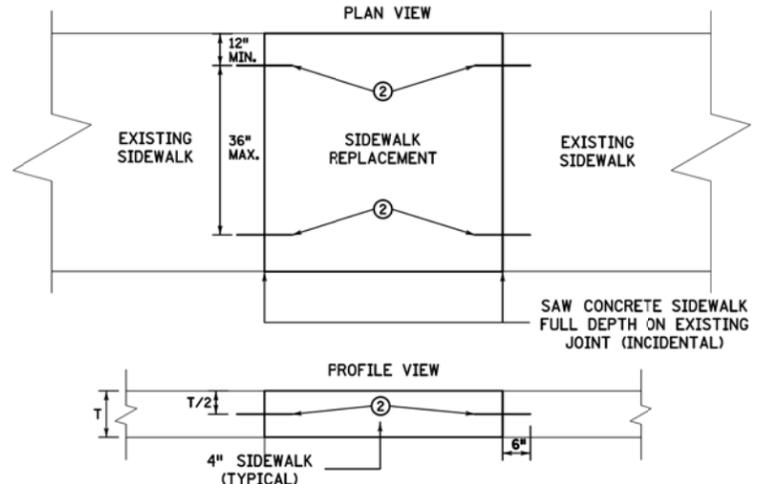
**FLOW LINE PROFILE "TABLE" - FAN**



**FLOW LINE PROFILE RAISE - TWIN PERPENDICULARS**

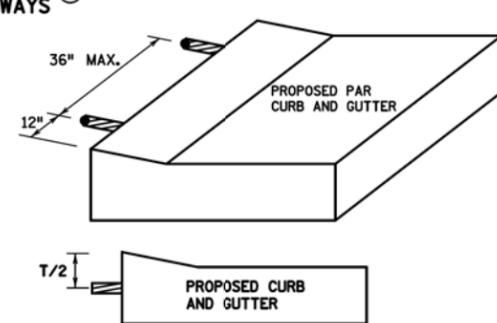


**FLOW LINE PROFILE RAISE - FAN**

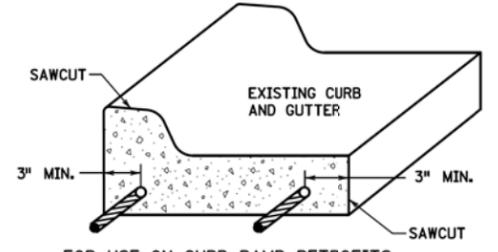


**OPTIONAL SIDEWALK REINFORCEMENT**

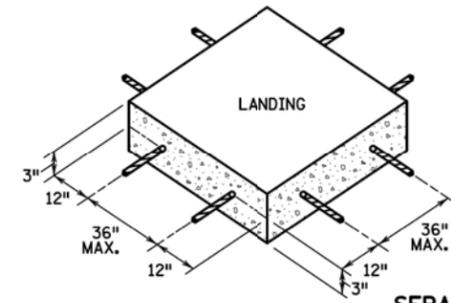
SIDEWALK REINFORCEMENT TO BE USED ONLY WHEN SPECIFIED IN THE PLAN.



**OPTIONAL CURB LINE REINFORCEMENT DETAILS (2) (4)**



**CURB AND GUTTER REINFORCEMENT (3)**



**SEPARATE LANDING POUR REINFORCEMENT (1)**

"TABLING" OF CROSSWALKS MEANS MAINTAINING LESS THAN 2% CROSS SLOPE WITHIN A CROSSWALK, IS REQUIRED WHEN A ROADWAY IS IN A STOP OR YIELD CONDITION AND THE PROJECT SCOPE ALLOWS.

RECONSTRUCTION PROJECTS: ON FULL PAVEMENT REPLACEMENT PROJECTS "TABLING" OF ENTIRE CROSSWALK SHALL OCCUR WHEN FEASIBLE.

MILL & OVERLAY PROJECTS: "TABLING" OF FLOW LINES, IN FRONT OF THE PEDESTRIAN RAMP, IS REQUIRED WHEN THE EXISTING FLOW LINE IS GREATER THAN 2%. WARPING OF THE BITUMINOUS PAVEMENT CAN NOT EXTEND INTO THE THROUGH LANE. TABLE THE FLOW LINE TO 2% OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA:

- 1) 1.0% MIN. CROSS-SLOPE OF THE ROAD
- 2) 5.0% MAX. CROSS-SLOPE OF THE ROAD
- 3) "TABLE" FLOW LINE UP TO 4% CHANGE IN FRONT OF PEDESTRIAN RAMP
- 4) UP TO 2% CHANGE IN FLOW LINE FROM EXISTING SLOPE BEYOND THE PEDESTRIAN CURB RAMP

STAND-ALONE ADA RETROFITS: FOLLOW MILL & OVERLAY CRITERIA ABOVE HOWEVER ALL PAVEMENT WARPING IS DONE WITH BITUMINOUS PATCHING ON BITUMINOUS ROADWAYS AND FULL-DEPTH APRON REPLACEMENT ON CONCRETE ROADWAYS.

RAISING OF CURB LINES SHOULD OCCUR IN VERTICALLY CONSTRAINED AREAS. RAISE THE CURB LINES ENOUGH TO ALLOW COMPLIANT RAMPS OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA:

- 1) 1.0% MIN. AND 5.0% MAXIMUM CROSS-SLOPE OF THE ROAD
- 2) 1.0% MIN. FLOW LINE (ON EITHER SIDE OF PEDESTRIAN RAMP) TO MAINTAIN POSITIVE DRAINAGE
- 3) 5.0% RECOMMENDED MAX. FLOW LINE
- 4) LONGITUDINAL THROUGH LANE ROADWAY TAPERS SHOULD BE 1" VERTICAL PER 15' HORIZONTAL

**NOTES:**

- ① TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, ALL INITIAL LANDINGS AT A TOP OF A RAMPED SURFACE (RUNNING SLOPE GREATER THAN 2%) SHALL BE FORMED AND PLACED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON THIS SHEET FOR ALL SEPARATELY Poured INITIAL LANDINGS.
- ② DRILL AND GROUT NO. 4 12" LONG REINFORCEMENT BARS AT 36" MAXIMUM CENTER TO CENTER (EPOXY COATED). BARS TO BE ADJUSTED TO MATCH RAMP GRADE.
- ③ DRILL AND GROUT 2 - NO. 4 X 12" LONG REINFORCEMENT BARS (EPOXY COATED). REINFORCEMENT REQUIRED FOR ALL CONSTRUCTION JOINTS WITHIN RADIUS.
- ④ THIS OPTIONAL CURB LINE REINFORCEMENT DETAIL SHOULD ONLY BE USED ON BITUMINOUS ROADWAYS WHEN SPECIFIED IN THE PLAN.
- ⑤ 1/2 IN. PREFORMED JOINT FILLER MATERIAL PER MNDOT SPEC. 3702.

REVISION:	
APPROVED: JANUARY 23, 2017	
OPERATIONS ENGINEER	



REVISOR: [Signature]  
 APPROVED: 1-23-2017  
 STATE DESIGN ENGINEER

<b>PEDESTRIAN CURB RAMP DETAILS</b>	
STANDARD PLAN 5-297.250	6 OF 6

I hereby certify that this plan 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.  
 Certified By: [Signature]  
 Licensed Professional Engineer Lic. No. 19254  
 Printed Name: MICHAEL E. KOTILA Date: 8/1/2019



PHONE: (651)490-2000  
 3535 VADNAIS CENTER DR.  
 ST. PAUL, MN 55110



GOLDEN VALLEY  
 BIKE LANES

SLIP RAMP PLAN

DETAILS

FILE NO.	47
GOLDV148501	
GM7	
OF CM7	47