MINNESOTA DEPARTMENT OF TRANSPORTATION

HENNEPIN COUNTY TRANSPORTATION DEPARTMENT

CONSTRUCTION PLAN FOR GRADING, BITUMINOUS SURFACING, STORM SEWER, SANITARY SEWER,
WATER MAIN, LIGHTING, RRFB, RETAINING WALLS AND ADA IMPROVEMENTS

COUNTY STATE AID HIGHWAY NO. 51 &19

CITY OF SPRING PARK AND ORONO

FROM CSAH 15 TO CSAH 19

GROSS LENGTH	3,667.23 FEET	0.695 MILES
BRIDGE LENGTH	0.00 FEET	0.000 MILES
EXCEPTION LENGTH	0.00 FEET	0.000 MILES
NET LENGTH	3,667.23 FEET	0.695 MILES

LENGTH AND DESCRIPTION BASED UPON C/L CSAH 51

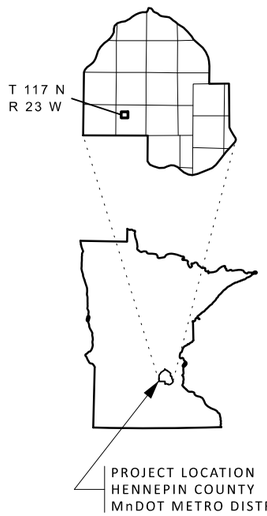
FROM SOUTH OF CSAH 51 TO COFFEE BRIDGE ON CSAH 19

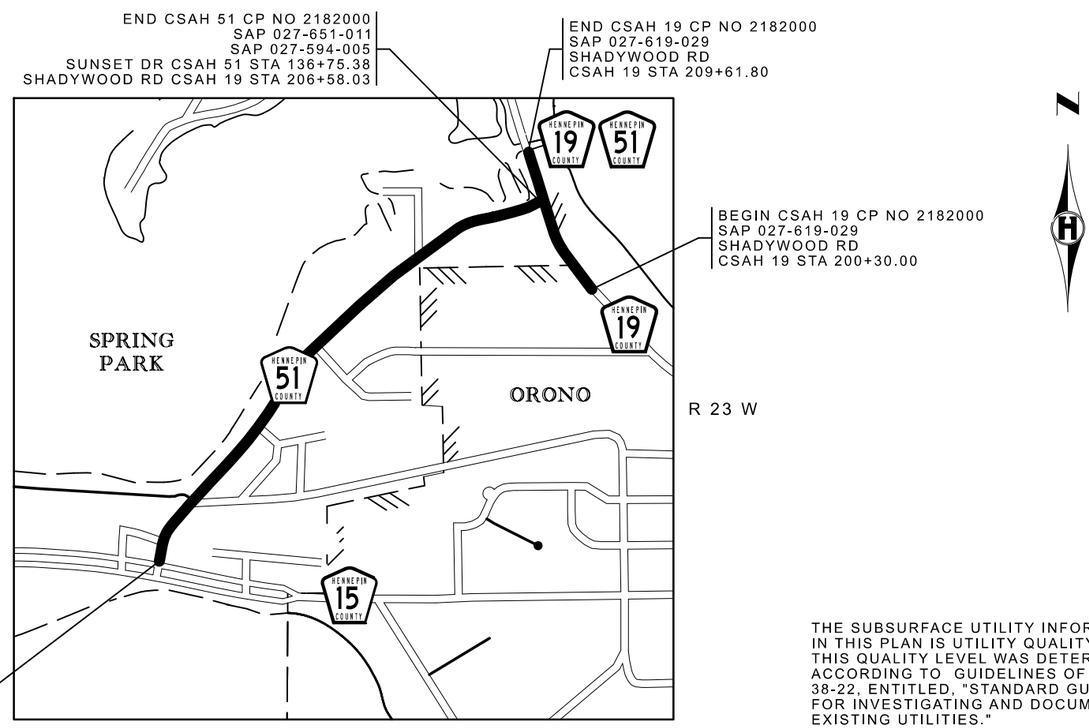
GROSS LENGTH	931.80 FEET	0.177 MILES
BRIDGE LENGTH	0.00 FEET	0.000 MILES
EXCEPTION LENGTH	0.00 FEET	0.000 MILES
NET LENGTH	931.80 FEET	0.177 MILES

LENGTH AND DESCRIPTION BASED UPON C/L CSAH 51 & CSAH 19

PROJECT IS LOCATED WITHIN THE FOLLOWING LAND SECTIONS:

T 117 N, R 23 W SECTIONS: 17 & 18





THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDELINES OF CI/ASCE 38-22, ENTITLED, "STANDARD GUIDELINES FOR INVESTIGATING AND DOCUMENTING EXISTING UTILITIES."

I HEREBY CERTIFY THAT THE FINAL FIELD REVISIONS, IF ANY WERE 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.

PRINT NAME:_____ LICENSE #_____

DATE:_____ SIGNATURE:_____

SCALES

PLAN	1"= 50'
INTERSECTION PLAN	1"= 20'
INDEX MAP	1"= 1,000'
GENERAL LAYOUT	1"= 300'

DESIGN DESIGNATION FOR:	CSAH 51	CSAH 19	SHARED-USE PATH
R-VALUE	12	-	N/A
ADT (Current Year) 2024	2245	-	N/A
ADT (Future Year) 2044	2360	-	N/A
PAVEMENT DESIGN	10 TON	10 TON	N/A
FUNCTIONAL CLASSIFICATION	MAJOR COLLECTOR	B-MINOR ARTERIAL	N/A
NO. OF TRAFFIC LANES	2	2	N/A
NO. OF PARKING LANES	0	0	N/A
ESALS (20)	470,000	-	N/A
Design Speed	30 MPH	30 MPH / 35 MPH	20 MPH
Based on Sight Distance	STOPPING	STOPPING	STOPPING
Height of eye / Height of Object	3.5' / 2.0'	3.5' / 2.0'	4.5' / 0'
Design Speed not achieved at:	N/A	N/A	N/A

GOVERNING SPECIFICATIONS

THE 2025 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MOST RECENT EDITION OF THE "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" INCLUDING THE LATEST "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS."

INDEX

THIS PLAN CONTAINS 336 SHEETS

APPROVED _____ DATE
HENNEPIN COUNTY: COUNTY HIGHWAY ENGINEER

RECOMMENDED FOR APPROVAL _____ DATE
HENNEPIN COUNTY: DESIGN DIVISION ENGINEER

APPROVED _____ DATE
CITY OF SPRING PARK: CITY ENGINEER

APPROVED _____ DATE
CITY OF ORONO: CITY ENGINEER

_____ DATE
DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE WITH STATE AID AND/OR FEDERAL AID RULES/POLICY

_____ DATE
APPROVED FOR STATE AID AND/OR FEDERAL AID FUNDING: STATE AID ENGINEER

Hennepin

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.

AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

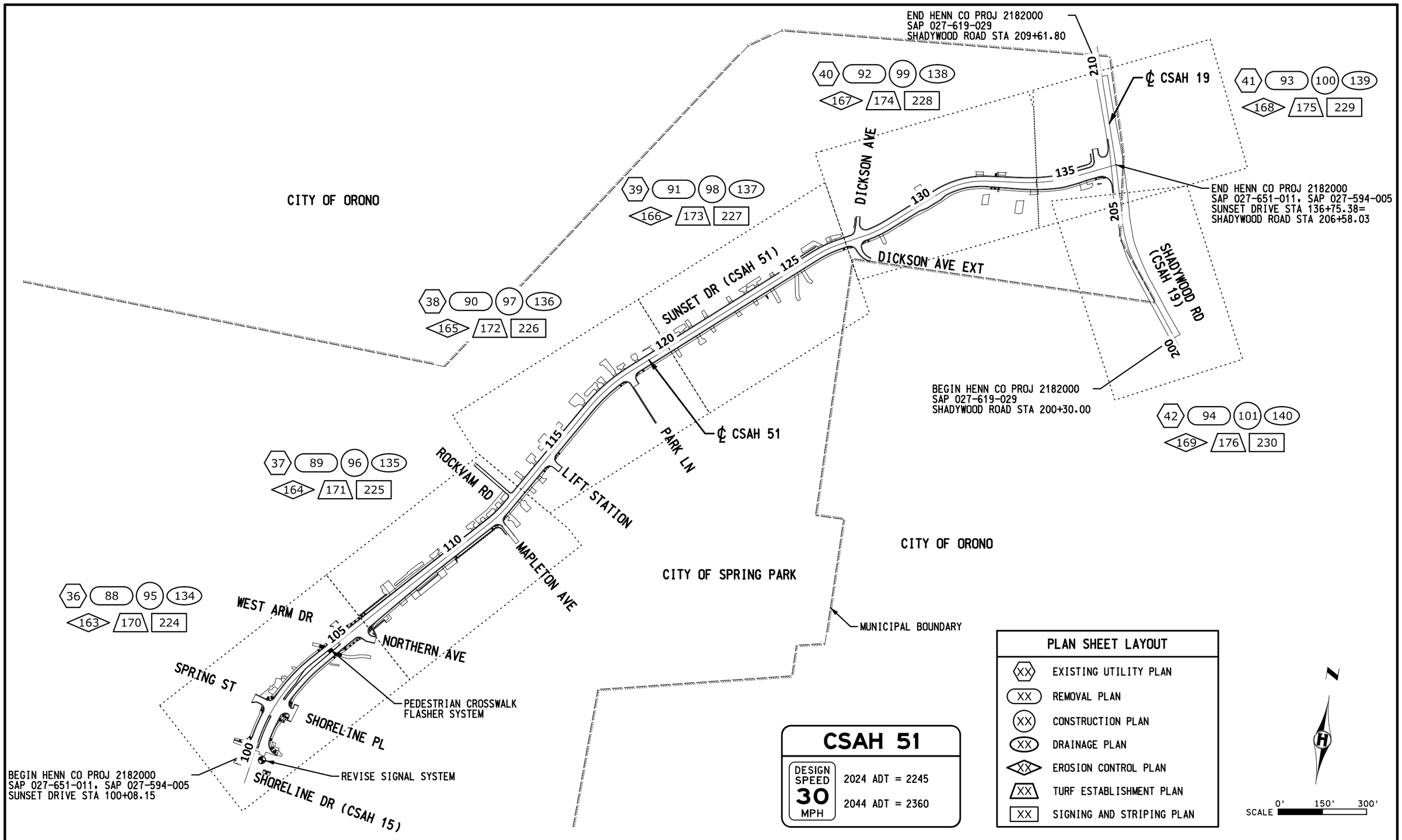
HENNEPIN COUNTY TRANSPORTATION DEPT. DESIGN TEAM

A. BENTSON	J. LABAT
B. SPECHT	S. PARK
E. ITKONEN	R. MANKE
R. ALLERS	L. LANGNER
A. CHALUPSKY	C. CULMONE

TITLE SHEET

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 1 / 336



CSAH 51

DESIGN SPEED	
30 MPH	2024 ADT = 2245
	2044 ADT = 2360

PLAN SHEET LAYOUT

- XX — EXISTING UTILITY PLAN
- XX — REMOVAL PLAN
- XX — CONSTRUCTION PLAN
- XX — DRAINAGE PLAN
- XX — EROSION CONTROL PLAN
- XX — TURF ESTABLISHMENT PLAN
- XX — SIGNING AND STRIPING PLAN

SCALE 0' 150' 300'

Hennepin

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

DESIGN BY:	A. BENTSON
CAD BY:	A. BENTSON
CHECKED BY:	S. PARK
LAST REVISION:	/ /

GENERAL LAYOUT

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 2 / 336

SHEET_001 CHCU001 9/30/2025 C:\Users\CHCU001\Hennepin County\Hennepin County Transportation Design - HC_Projects\051_1820\Design\Plans\1820_General_Layout.dgn

NOTES	TAB	SHEET NO.	ITEM NO.	ITEM DESCRIPTION		UNIT	TOTAL PROJECT QUANTITY	STATE AID PARTICIPATING			NON-PARTICIPATING
								HENNEPIN CO. SAP 027-651-011 SAP 027-619-029	SPRING PARK SAP 027-594-005 LRIP PRIORITY 1	STORM SEWER SAP 027-651-011 SAP 027-594-005 LRIP PRIORITY 2	SPRING PARK
								QUANTITY	QUANTITY	QUANTITY	QUANTITY
(1)			2011.601	VIBRATION MONITORING		LUMP SUM	1	1			
(1)			2011.601	AS BUILT		LUMP SUM	1	0.70	0.10	0.10	0.10
			2021.501	MOBILIZATION		LUMP SUM	1	0.70	0.10	0.10	0.10
			2031.502	FIELD OFFICE		EACH	1	0.70	0.10	0.10	0.10
			2031.502	FIELD LABORATORY		EACH	1	0.70	0.10	0.10	0.10
(2)	A	11	2101.502	CLEARING		EACH	129	129			
(3)	A	11	2101.502	GRUBBING		EACH	141	141			
	X	199	2102.518	PAVEMENT MARKING REMOVAL		SQ FT	396	396			
	A	12	2104.502	REMOVE POST		EACH	32	32			
	SL	245	2104.502	REMOVE LIGHTING UNIT		EACH	12	6	6		
	E	14	2104.502	REMOVE CONCRETE STEPS		EACH	24	24			
	ESS	WS4	2104.502	REMOVE MANHOLE (SANITARY)		EACH	15				15
	EWM	WS8	2104.502	REMOVE GATE VALVE		EACH	22				22
	EWM	WS8	2104.502	REMOVE HYDRANT		EACH	8				8
	I	21	2104.502	REMOVE DRAINAGE STRUCTURE		EACH	15	15			
	X	199	2104.502	REMOVE SIGN TYPE C		EACH	88	88			
	SL	245	2104.502	REMOVE LIGHT FOUNDATION		EACH	12	6	6		
			2104.502	REMOVE MAIL BOX SUPPORT		EACH	45	45			
	A	12	2104.502	SALVAGE BOULDER		EACH	2	2			
	X	199	2104.502	SALVAGE SIGN PANEL		EACH	38	38			
	A	11	2104.503	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)		LIN FT	2437	2437			
	EWM	WS8	2104.503	REMOVE WATER MAIN		LIN FT	4349				4349
	I	21	2104.503	REMOVE SEWER PIPE (STORM)		LIN FT	1101	1101			
	ESS	WS4	2104.503	REMOVE SEWER PIPE (SANITARY)		LIN FT	4439				4439
	ESS	WS4	2104.503	REMOVE SEWER SERVICE PIPE (SANITARY)		LIN FT	1623				1623
	A	11	2104.503	REMOVE CURB AND GUTTER		LIN FT	2148	2148			
	A	11	2104.503	REMOVE BITUMINOUS CURB		LIN FT	1640	1640			
	A	11	2104.503	REMOVE CONCRETE PARKING STOPS		LIN FT	36	36			
	T	123	2104.503	REMOVE RETAINING WALL		LIN FT	77	77			
	A	12	2104.503	REMOVE CONCRETE RETAINING WALL		LIN FT	59	59			
	A	12	2104.503	REMOVE WOOD RETAINING WALL		LIN FT	106	106			
	A	12	2104.503	REMOVE STONE RETAINING WALL		LIN FT	267	267			
	A	12	2104.503	REMOVE FENCE		LIN FT	51	51			
	A	12	2104.503	REMOVE CHAIN LINK FENCE		LIN FT	786	786			
	A	12	2104.503	REMOVE WOOD FENCE		LIN FT	438	438			
	A	12	2104.503	REMOVE CONCRETE BLOCK WALL		LIN FT	292	292			
	EWM	WS8	2104.503	REMOVE WATER SERVICE PIPE		LIN FT	2007				2007
	SL	245	2104.503	REMOVE DIRECT BURIED LIGHTING CABLE		LIN FT	1089	544.5	544.5		
	A	11	2104.504	REMOVE CONCRETE DRIVEWAY PAVEMENT		SQ YD	543	543			
	A	11	2104.504	REMOVE BITUMINOUS DRIVEWAY PAVEMENT		SQ YD	3130	3130			
	A	11	2104.504	REMOVE BITUMINOUS PAVEMENT	(P)	SQ YD	18041	18041			
	A	11	2104.504	REMOVE GRAVEL DRIVEWAY		SQ YD	1131	1131			
	A	11	2104.518	REMOVE BRICK SIDEWALK	(P)	SQ FT	2298	2298			
	A	12	2104.518	REMOVE BITUMINOUS WALK	(P)	SQ FT	1321	1321			
	A	11	2104.518	REMOVE CONCRETE WALK	(P)	SQ FT	10981	10981			
(1)	A	12	2104.602	REMOVE BOULDER		EACH	29	29			
	EW	7	2106.507	EXCAVATION - COMMON	(P)	CU YD	13894	13894			
	EW	7	2106.507	EXCAVATION - MUCK		CU YD	4295	4295			
	EW	7	2106.507	EXCAVATION - SUBGRADE	(P)	CU YD	9243	9243			
	EW	7	2106.507	SELECT GRANULAR EMBANKMENT (CV)	(P)	CU YD	3343	3343			
	EW	7	2106.507	SELECT GRANULAR EMBANKMENT MOD 10% (CV)		CU YD	3897	3897			
	EW	7	2106.507	COMMON EMBANKMENT (CV)	(P)	CU YD	3493	3493			
(1)			2106.601	DEWATERING		LUMP SUM	1				1
	EW	7	2106.607	HAUL AND DISPOSE OF CONTAMINATED MATERIAL		CU YD	651	651			
(1)	EW	7	2106.607	LIGHT-WEIGHT AGGREGATE		CU YD	3751	3751			
	D	14	2118.507	AGGREGATE SURFACING (CV) CLASS 2		CU YD	34	34			
(1)			2123.610	STREET SWEEPER (WITH PICKUP BROOM)		HOUR	225	225			
(4)			2130.523	WATER		M GALLON	9	9			
	D	14	2211.507	AGGREGATE BASE (CV) CLASS 6	(P)	CU YD	6010	6010			
(5)	D	14	2232.504	MILL BITUMINOUS SURFACE (2.0")		SQ YD	4090	4090			

ESTIMATED QUANTITY NOTES

(P) DENOTES PLAN QUANTITY

(1) SEE SPECIAL PROVISIONS

(2) TREE REMOVAL DATES ARE RESTRICTED. SEE SPECIAL PROVISIONS

(3) NO GRUBBING ACTIVITY SHALL OCCUR UNTIL EROSION CONTROL DEVICES ARE IN PLACE

(4) FOR USE AS DIRECTED BY THE ENGINEER

(5) MILLING AROUND STRUCTURES SHALL BE INCIDENTAL

(6) BITUMINOUS TACK COAT SHALL BE INCIDENTAL

Hennepin

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

DESIGN BY: A. BENTSON
CAD BY: A. BENTSON
CHECKED BY: S. PARK
LAST REVISION: / /

STATEMENT OF ESTIMATED QUANTITIES

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 3 / 336

NOTES	TAB	SHEET NO.	ITEM NO.	ITEM DESCRIPTION	UNIT	TOTAL PROJECT QUANTITY	STATE AID PARTICIPATING			NON-PARTICIPATING
							HENNEPIN CO. SAP 027-651-011 SAP 027-619-029	SPRING PARK SAP 027-594-005 LRIP PRIORITY 1	STORM SEWER SAP 027-651-011 SAP 027-594-005 LRIP PRIORITY 2	SPRING PARK
							QUANTITY	QUANTITY	QUANTITY	QUANTITY
(6)	D	14	2360.509	TYPE SP 9.5 WEARING COURSE MIXTURE (2;C)	TON	675	675			
(6)	D	14	2360.509	TYPE SP 9.5 WEARING COURSE MIXTURE (3;C)	TON	463	463			
(6)	D	14	2360.509	TYPE SP 12.5 NON WEARING COURSE MIXTURE (2;B)	TON	2670	2670			
(6)	D	14	2360.509	TYPE SP 12.5 WEARING COURSE MIXTURE (2;F)	TON	3405	3405			
(1)	E	14	2411.603	CONCRETE STEPS-DESIGN SPECIAL	LIN FT	24	24			
(1)	T	123	2411.618	PREFABRICATED MODULAR BLOCK WALL	SQ FT	4659	4659			
	T	123	2451.507	STRUCTURE EXCAVATION CLASS U (P)	CU YD	2131	2131			
	U	145	2451.507	FINE FILTER AGGREGATE (CV)	CU YD	463			463	
	T	123	2475.503	ORNAMENTAL METAL RAILING	LIN FT	118	118			
	U	145	2501.502	12" RC PIPE APRON	EACH	1			1	
	U	145	2501.502	18" RC PIPE APRON	EACH	2			2	
	U	145	2501.502	24" RC PIPE APRON	EACH	1			1	
	U	145	2501.502	58" SPAN RC PIPE-ARCH APRON	EACH	1			1	
(1)	U	145	2501.602	TRASH GUARD FOR 12" PIPE APRON	EACH	1			1	
(1)	U	145	2501.602	TRASH GUARD FOR 58" SPAN PIPE APRON	EACH	1			1	
	U	145	2502.503	4" PERF PE PIPE DRAIN	LIN FT	5445			5445	
	PSS	WS11	2503.503	4" PVC PIPE SEWER	LIN FT	35				35
	PSS	WS11	2503.503	6" PVC PIPE SEWER	LIN FT	39				39
	PSS	WS11	2503.503	8" PVC PIPE SEWER	LIN FT	3227				3227
	U	145	2503.503	15" PVC PIPE SEWER	LIN FT	145			145	
	PSS	WS11	2503.503	18" PVC PIPE SEWER	LIN FT	90				90
	U	145	2503.503	44" SPAN RC PIPE-ARCH SEWER CLASS IIIA	LIN FT	44			44	
	U	145	2503.503	58" SPAN RC PIPE-ARCH SEWER CLASS IIIA	LIN FT	156			156	
	U	145	2503.503	12" RC PIPE SEWER DESIGN 3006 CLASS V	LIN FT	108			108	
	U	145	2503.503	15" RC PIPE SEWER DESIGN 3006 CLASS V	LIN FT	1752			1752	
	U	145	2503.503	18" RC PIPE SEWER DESIGN 3006 CLASS III	LIN FT	713			713	
	U	145	2503.503	21" RC PIPE SEWER DESIGN 3006 CLASS III	LIN FT	290			290	
	U	145	2503.503	24" RC PIPE SEWER DESIGN 3006 CLASS III	LIN FT	153			153	
	U	145	2503.503	30" RC PIPE SEWER DESIGN 3006 CLASS III	LIN FT	854			854	
			2503.601	TEMPORARY BYPASS PUMPING	LUMP SUM	1				1
(1)	PSS	WS11	2503.602	CONNECT TO EXISTING SANITARY SEWER	EACH	9				9
(1)	PSS	WS11	2503.602	CONNECT TO EXISTING MANHOLES (SAN)	EACH	3				3
(1)	U	145	2503.602	CONNECT TO EXISTING STORM SEWER	EACH	9			9	
(1)	U	145	2503.602	CONNECT INTO EXISTING DRAINAGE STRUCTURE	EACH	1			1	
(1)	PSS	WS11	2503.602	8"X4" PVC WYE	EACH	50				50
(1)	I	21	2503.603	FILL AND ABANDON PIPE	LIN FT	225	225			
(1)	PSS	WS11	2503.603	CLEAN AND VIDEO TAPE PIPE SEWER	LIN FT	3391				3391
	U	145	2503.603	15" PVC SLOTTED DRAIN	LIN FT	24			24	
(1)	PSS	WS11	2503.603	4" PVC SANITARY SERVICE PIPE	LIN FT	1673				1673
(1)	PSS	WS11	2503.603	6" PVC FORCE MAIN	LIN FT	1457				1457
			2504.601	TEMPORARY WATER SERVICE	LUMP SUM	1				1
(1)	PWM	WS15	2504.602	CONNECT TO EXISTING WATER MAIN	EACH	8				8
(1)	PWM	WS15	2504.602	HYDRANT	EACH	11				11
(1)	PWM	WS15	2504.602	1" CORPORATION STOP	EACH	49				49
	PWM	WS15	2504.602	1.5" CORPORATION STOP	EACH	1				1
(1)	PWM	WS15	2504.602	6" GATE VALVE	EACH	11				11
(1)	PWM	WS15	2504.602	8" GATE VALVE	EACH	21				21
(1)	PWM	WS15	2504.602	1" CURB STOP AND BOX	EACH	49				49
	PWM	WS15	2504.602	1.5" CURB STOP AND BOX	EACH	27				27
(1)	PWM	WS15	2504.603	1" TYPE K COPPER PIPE	LIN FT	1571				1571
	PWM	WS15	2504.603	1.5" TYPE K COPPER PIPE	LIN FT					
(1)	PWM	WS15	2504.603	6" PVC WATERMAIN	LIN FT	275				275
(1)	PWM	WS15	2504.603	8" PVC WATERMAIN	LIN FT	4001				4001
	PSS	WS11	2504.608	PIPE FITTINGS	POUND	178				178
	PWM	WS15	2504.608	FITTINGS	POUND	2204				2204
	U	145	2506.502	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL 1	EACH	1			1	
	U	145	2506.502	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL 2	EACH	1			1	
	U	145	2506.502	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL 3	EACH	1			1	
	U	145	2506.502	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL 4	EACH	1			1	
	U	145	2506.502	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL 5	EACH	1			1	

ESTIMATED QUANTITY NOTES

(P) DENOTES PLAN QUANTITY

(1) SEE SPECIAL PROVISIONS

(2) TREE REMOVAL DATES ARE RESTRICTED. SEE SPECIAL PROVISIONS

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Hennepin

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

DESIGN BY: A. BENTSON
CAD BY: A. BENTSON
CHECKED BY: S. PARK
LAST REVISION: / /

STATEMENT OF ESTIMATED QUANTITIES

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 4 / 336

NOTES	TAB	SHEET NO.	ITEM NO.	ITEM DESCRIPTION	UNIT	TOTAL PROJECT QUANTITY	STATE AID PARTICIPATING			NON-PARTICIPATING
							HENNEPIN CO. SAP 027-651-011 SAP 027-619-029	SPRING PARK SAP 027-594-005 LRIP PRIORITY 1	STORM SEWER SAP 027-651-011 SAP 027-594-005 LRIP PRIORITY 2	SPRING PARK
							QUANTITY	QUANTITY	QUANTITY	QUANTITY
	U	145	2506.502	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL 6	EACH	1			1	
	U	145	2506.502	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL 7	EACH	1			1	
	U	145	2506.502	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL 8	EACH	1			1	
	U	145	2506.502	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL 9	EACH	1			1	
	PSS	WS11	2506.502	CONSTRUCT DRAINAGE STRUCTURE DESIGN 4007	EACH	18				18
	V	145	2506.502	CASTING ASSEMBLY	EACH	57.0			57.0	
	U	145	2506.503	CONSTRUCT DRAINAGE STRUCTURE DESIGN G OR H	LIN FT	53.4			53.4	
	U	145	2506.503	CONSTRUCT DRAINAGE STRUCTURE DESIGN 48-4020	LIN FT	129.8			129.8	
	U	145	2506.503	CONSTRUCT DRAINAGE STRUCTURE DESIGN 60-4020	LIN FT	71.1			71.1	
	U	145	2506.503	CONSTRUCT DRAINAGE STRUCTURE DESIGN 72-4020	LIN FT	5.2			5.2	
	U	145	2506.503	CONSTRUCT DRAINAGE STRUCTURE DESIGN 84-4020	LIN FT	4.9			4.9	
	U	145	2506.503	CONSTRUCT DRAINAGE STRUCTURE DESIGN 90-4020	LIN FT	4.9			4.9	
	U	145	2511.504	GEOTEXTILE FILTER TYPE 4	SQ YD	124			124	
	U	145	2511.507	RANDOM RIPRAP CLASS III	CU YD	35			35	
	A	12	2511.602	PLACE BOULDER	EACH	2	2			
	B	13	2521.518	4" CONCRETE WALK	SQ FT	970	970			
	B	13	2521.518	6" CONCRETE WALK	SQ FT	35471	17735.5	17735.5		
	B	13	2531.503	CONCRETE CURB AND GUTTER DESIGN B412	LIN FT	284	142	142		
	B	13	2531.503	CONCRETE CURB AND GUTTER DESIGN B424	LIN FT	81	40.5	40.5		
	B	13	2531.503	CONCRETE CURB AND GUTTER DESIGN B612	LIN FT	929	929			
	B	13	2531.503	CONCRETE CURB AND GUTTER DESIGN B624	LIN FT	8155	4077.5	4077.5		
	B	13	2531.503	CONCRETE CURB AND GUTTER DESIGN D424	LIN FT	97	48.5	48.5		
	B	13	2531.504	6" CONCRETE DRIVEWAY PAVEMENT	SQ YD	440	220	220		
	B	13	2531.504	8" CONCRETE DRIVEWAY PAVEMENT	SQ YD	419	209.5	209.5		
(1)	B	13	2531.603	CONCRETE SILL	LIN FT	4567	2283.5	2283.5		
(1)	C	13	2531.603	CONCRETE CURB DESIGN V	LIN FT	268	268			
(1)	B	13	2531.618	TRUNCATED DOMES	SQ FT	663	663			
			2533.503	PORTABLE PRECAST CONCRETE BARRIER DESIGN 8337	LIN FT	200	200.00			
			2533.503	RELOCATE PORTABLE PRECAST CONCRETE BARRIER DESIGN 8337	LIN FT	2000	2000			
(1)			2540.602	MAIL BOX SUPPORT	EACH	45	45			
	SL	245	2545.501	LIGHTING SYSTEM	LUMP SUM	1.0	0.5	0.5		
	U	145	2554.502	GUIDE POST TYPE B	EACH	5			5	
	T	123	2557.503	WIRE FENCE DESIGN 48V-9322	LIN FT	393	393			
(1)		198	2563.601	TRAFFIC CONTROL SUPERVISOR	LUMP SUM	1	1			
(1)		198	2563.601	TRAFFIC CONTROL	LUMP SUM	1.00	0.70	0.10	0.10	0.10
(1)			2563.601	ALTERNATE PEDESTRIAN ROUTE	LUMP SUM	1	1			
(1)		198	2563.613	PORTABLE CHANGEABLE MESSAGE SIGN	UNIT DAY	40	40			
	X	199	2564.502	INSTALL SIGN TYPE C	EACH	38	38			
	X	199	2564.518	SIGN PANELS TYPE C	SQ FT	472	472			
(1)	Z	238	2565.616	PEDESTRIAN CROSSWALK FLASHER SYSTEM	SYSTEM	1	1			
(1)			2565.616	REVISE SIGNAL SYSTEM	SYSTEM	1	1			
			2573.501	STABILIZED CONSTRUCTION EXIT	LUMP SUM	1	1			
			2573.501	EROSION CONTROL SUPERVISOR	LUMP SUM	1	1			
	F	15	2573.502	STORM DRAIN INLET PROTECTION	EACH	75	75			
			2573.503	SILT FENCE; TYPE HI	LIN FT	1000	1000			
	F	15	2573.503	FLOTATION SILT CURTAIN TYPE STILL WATER	LIN FT	119	119			
	F	15	2573.503	SEDIMENT CONTROL LOG TYPE COMPOST	LIN FT	9293	9293			
	G	15	2574.505	SUBSOILING	ACRE	2.5	2.5			
	G	15	2574.505	SOIL BED PREPARATION	ACRE	2.5	2.5			
	EW	7	2574.507	ORGANIC TOPSOIL BORROW	CU YD	1076	1076			
	G	15	2574.508	FERTILIZER TYPE 3	POUND	484	484			
	G	15	2574.508	FERTILIZER TYPE 4	POUND	8	8			
	G	15	2575.505	SEEDING	ACRE	2.5	2.5			
	F	15	2575.523	RAPID STABILIZATION METHOD 3	M GALLON	2.6	2.6			
(1)	G	15	2575.608	SEED SOUTHERN BOULEVARD	POUND	195	195			
(1)	G	15	2575.608	SEED TURFGRASS	POUND	239	239			
(1)	G	15	2575.608	SEED WET DITCH	POUND	2	2			
			2582.503	MOBILE RETROREFLECTOMETER MEASUREMENTS	LIN FT	13826	13826			
	X	199	2582.503	4" SOLID LINE PAINT	LIN FT	36	36			
	X	199	2582.503	6" SOLID LINE MULTI-COMPONENT GROUND IN	LIN FT	8436	8436			

ESTIMATED QUANTITY NOTES

(P) DENOTES PLAN QUANTITY

(1) SEE SPECIAL PROVISIONS

(2) TREE REMOVAL DATES ARE RESTRICTED. SEE SPECIAL PROVISIONS

(3) NO GRUBBING ACTIVITY SHALL OCCUR UNTIL EROSION CONTROL DEVICES ARE IN PLACE

(4) FOR USE AS DIRECTED BY THE ENGINEER

(5) MILLING AROUND STRUCTURES SHALL BE INCIDENTAL

(6) BITUMINOUS TACK COAT SHALL BE INCIDENTAL

Hennepin

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

DESIGN BY: A. BENTSON
CAD BY: A. BENTSON
CHECKED BY: S. PARK
LAST REVISION: / /

STATEMENT OF ESTIMATED QUANTITIES

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 5 / 336

ESTIMATED QUANTITY NOTES

(P) DENOTES PLAN QUANTITY

(1) SEE SPECIAL PROVISIONS

(2) TREE REMOVAL DATES ARE RESTRICTED. SEE SPECIAL PROVISIONS

(3) NO GRUBBING ACTIVITY SHALL OCCUR UNTIL EROSION CONTROL DEVICES ARE IN PLACE

(4) FOR USE AS DIRECTED BY THE ENGINEER

(5) MILLING AROUND STRUCTURES SHALL BE INCIDENTAL

(6) BITUMINOUS TACK COAT SHALL BE INCIDENTAL

NOTES	TAB	SHEET NO.	ITEM NO.	ITEM DESCRIPTION	UNIT	TOTAL PROJECT QUANTITY	STATE AID PARTICIPATING			NON-PARTICIPATING
							HENNEPIN CO. SAP 027-651-011 SAP 027-619-029	SPRING PARK SAP 027-594-005 LRIP PRIORITY 1	STORM SEWER SAP 027-651-011 SAP 027-594-005 LRIP PRIORITY 2	SPRING PARK
							QUANTITY	QUANTITY	QUANTITY	QUANTITY
	X	199	2582.503	6" DOTTED LINE MULTI COMP GR IN	LIN FT	52	52			
	X	199	2582.503	4" DOUBLE SOLID LINE MULTI-COMPONENT GROUND IN	LIN FT	5070	5070			
	X	199	2582.503	24" SOLID LINE PREFORM THERMO GROUND IN	LIN FT	232	232			
	X	199	2582.518	PAVEMENT MESSAGE PREFORM THERMOPLASTIC ENHANCED SKID RESISTANCE	SQ FT	105	105			
	X	199	2582.518	CROSSWALK PREFORM THERMOPLASTIC GROUND IN ENHANCED SKID RESISTANCE	SQ FT	774	774			

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49073
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SHEET 6 / 336

THE FOLLOWING STANDARD PLATES, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION, SHALL APPLY TO THIS PROJECT.

STANDARD PLATES

PLATE NO.	DESCRIPTION
3000M	REINFORCED CONCRETE PIPE (6 SHEETS)
3006H	GASKET JOINT FOR R.C. PIPE (2 SHEETS)
3007F	SHEAR REINFORCEMENT FOR PRECAST DRAINAGE STRUCTURES
3014L	REINFORCED CONCRETE PIPE ARCH (3 SHEETS)
3100G	CONCRETE APRON FOR REINFORCED CONCRETE PIPE
3110G	CONCRETE APRON FOR REINFORCED CONCRETE PIPE-ARCH
3133D	RIPRAP AT RCP OUTLETS
3136B	SLOTTED VANE DRAIN FOR P.V.C. PIPE
3145G	CONCRETE PIPE OR PRECAST BOX CULVERT TIES
4006L	MANHOLE OR CATCH BASIN PRECAST - DESIGNS G & H
4007C	PRECAST MECHANICAL JOINT SEWER MANHOLE
4010I	CONCRETE ADJUSTING RINGS
4011E	PRECAST CONCRETE BASE
4020J	MANHOLE OR CATCH BASIN - FOR USE WITH OR WITHOUT TRAFFIC LOADS (2 SHEETS)
4026B	CONCRETE - ENCASED CONCRETE ADJUSTING RINGS
4101D	RING CASTING FOR MANHOLE OR CATCH BASIN
4125D	CATCH BASIN FRAME CASTING (FOR SQUARE GRATE) - CASTING NO. 806
4132G	CATCH BASIN FRAME CASTING (FOR SQUARE GRATE) - CASTING NO. 805
4133A	CURB BOX CASTING FOR CATCH BASIN - CASTING NO. 824
4143E	STOOL GRATE & CONCRETE FRAME (MEDIAN DRAINS) - CASTING NO. 731
4154B	CATCH BASIN GRATE CASTING - CASTING NO. 816
4180J	MANHOLE OR CATCH BASIN STEP
7020K	CONCRETE CURB (DESIGN B, V, S, DR & BR) (2 SHEETS)
7038A	DETECTABLE WARNING SURFACE - TRUNCATED DOMES
7100H	CONCRETE CURB AND GUTTER - DESIGN B AND DESIGN V
7111J	INSTALLATION OF CATCH BASIN CASTINGS - CONCRETE CURB & GUTTER
7113A	CONCRETE APPROACH NOSE DETAIL
8000K	TEMPORARY CHANNELIZERS (3 SHEETS)
8150C	INSTALLATION OF CULVERT MARKERS

TABULATION INDEX

TAB	SHEET NO.	DESCRIPTION
EW	7	EARTHWORK SUMMARY
A	11 - 12	MISCELLANEOUS REMOVAL TABULATION
B	13	CONCRETE TABULATION
C	13	SIDEWALK V CURB
D	14	SURFACING MATERIAL TABULATION
E	14	STAIRWAY TABULATION
F	15	EROSION CONTROL TABULATION
G	15	TURF ESTABLISHMENT TABULATION
H	16 - 19	DRIVEWAY TABULATIONS
I - S	21 - 34	EXISTING UTILITY TABULATIONS
T	123	RETAINING WALL TABULATION
U	145	DRAINAGE SUMMARY TABULATION
V	145	CASTING ASSEMBLY SUMMARY
W	145	SUBDRAIN SUMMARY
X	199	SIGNING AND STRIPING TABULATION
Y	211 - 215	SIGN AND DELINEATOR / MARKER
Z	238	FLASHER SYSTEM QUANTITIES
SL	245	LIGHTING TABULATION
ESS	WS1 - WS4	EXISTING SANITARY SEWER TABULATION
EWM	WS5 - WS8	EXISTING WATERMAIN TABULATION
PSS	WS9 - WS11	PROPOSED SANITARY SEWER TABULATION
PWM	WS12 - WS15	PROPOSED WATERMIAN TABULATION

BASIS OF ESTIMATED QUANTITIES

WEARING & NON-WEARING BITUMINOUS MIXTURE	113 LBS. PER SQ. YD. PER 1" THICKNESS
BITUMINOUS MATERIAL FOR TACK COAT	0.05 GAL. PER SQ. YD. (INCIDENTAL)
WATER	50 (M) GALLONS PER DIRECTIONAL MILE
CALCIUM CHLORIDE SOLUTION	0.23 GAL. PER SQ. YD. GRADING
HYDRAULIC REINFORCED FIBER MATRIX	3900 LBS. PER ACRE
RAPID STABILIZATION METHOD 3	6 MGAL SLURRY PER ACRE

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LAST REVISION: / /

STANDARD PLATES AND TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 7 / 336

EARTHWORK SUMMARY

EW

LOCATION	2106 EXCAVATION - COMMON	2106 EXCAVATION - SUBGRADE	2106 HAUL AND DISPOSE OF CONTAMINATED MATERIAL	2106 EXCAVATION - MUCK	2106 COMMON EMBANKMENT (CV)	2016 LIGHT-WEIGHT AGGREGATE	2106 SELECT GRANULAR EMBANKMENT MOD 10% (CV)	2106 SELECT GRANULAR EMBANKMENT (CV)	2574 ORGANIC TOPSOIL BORROW (CV)
	CU YD	CU YD	CU YD	CU YD	CU YD	CU YD	CU YD	CU YD	CU YD
SAP 027-651-011									
CSAH 51	12948	5434			2300			3285	998
ROCKVAM ROAD	98				35				52
MAPLETON AVE NE	26	19			1			19	3
PARK LN SE	37	29			7			29	16
DICKSON AVE NE	33	10			2			10	7
SUBGRADE CORRECTION				4295	396		3897		
GROUND IMPROVEMENT	752	3751			752	3751			
SOIL MANAGEMENT AREA			651						
SAP 027-651-011 TOTAL	13894	9243	651	4295	3493	3751	3897	3343	1076
PROJECT TOTALS	13894	9243	651	4295	3493	3751	3897	3343	1076

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EARTHWORK SUMMARY AND TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 8 / 336

EARTHWORK QUANTITIES

STATION	CSAH 51				
	2106	2106	2106	2106	2574
	EXCAVATION - COMMON	EXCAVATION - SUBGRADE	COMMON EMBANKMENT	SELECT GRANULAR	ORGANIC TOPSOIL BORROW (CV)
	CU YD	CU YD	CU YD	CU YD	CU YD
100+08.15					
100+24.58	46	43		43	
100+50.00	137	100	13	100	
101+00.00	148	126	50	126	6
101+50.00	147	120	28	120	11
102+00.00	181	143	3	143	5
102+50.00	162	133	10	133	4
103+00.00	117	101	29	101	10
103+50.00	119	90	34	90	12
104+00.00	133	80	49	80	11
104+50.00	172	85	38	85	8
105+00.00	245	92	4	92	8
105+50.00	269	92	7	92	9
106+00.00	289	53	13	53	10
106+50.00	283	8	10	8	6
107+00.00	222		4		10
107+50.00	224		4		9
108+00.00	254		17		3
108+50.00	271		19		5
109+00.00	232		5		5
109+50.00	171		12		7
110+00.00	126	36	10	36	5
110+50.00	150	72	11	72	10
111+00.00	204	71	12	71	17
111+50.00	247	72	2	72	6
112+00.00	254	72	143	72	11
112+50.00	222	71	146	71	19
113+00.00	210	71	12	71	19
113+50.00	181	71	38	71	27
114+00.00	141	72	55	72	30
114+50.00	129	66	89	82	34
115+00.00	93	65	100	82	38
115+50.00	40	71	67	71	29
116+00.00	46	71	68	71	28
116+50.00	65	71	57	71	25
117+00.00	66	71	29	71	20
117+50.00	98	72	18	72	15
118+00.00	198	73	8	73	4
118+50.00	232	101	3	101	10
119+00.00	171	100	5	100	21
119+50.00	156	72	9	72	23
SUBTOTALS	6851	2707	1231	2740	530

EARTHWORK QUANTITIES

STATION	CSAH 51				
	2106	2106	2106	2106	2574
	EXCAVATION - COMMON	EXCAVATION - SUBGRADE	COMMON EMBANKMENT	SELECT GRANULAR	ORGANIC TOPSOIL BORROW (CV)
	CU YD	CU YD	CU YD	CU YD	CU YD
120+00.00	140	72	20	72	29
120+50.00	109	71	35	71	34
121+00.00	110	72	23	72	16
121+50.00	138	72	7	72	13
122+00.00	153	71	13	71	33
122+50.00	105	71	14	71	34
123+00.00	79	71	10	71	34
123+50.00	82	71	9	71	29
124+00.00	123	71	7	71	19
124+50.00	162	71	8	71	26
125+00.00	198	71	11	71	36
125+50.00	289	71	12	71	33
126+00.00	368	69	19	71	33
126+50.00	451	70	13	72	39
127+00.00	470	72	3	72	47
127+50.00	487	124	18	124	49
128+00.00	379	124	20	124	34
128+50.00	248	71	17	71	33
129+00.00	231	71	43	71	33
129+50.00	182	71	102	71	37
130+00.00	129	76	82	77	29
130+50.00	80	76	93	81	27
131+00.00	58	64	128	76	38
131+50.00	52	65	74	71	37
132+00.00	51	73	42	73	28
132+50.00	65	76	25	76	23
133+00.00	103	79	30	79	28
133+50.00	154	82	61	82	37
134+00.00	166	85	50	85	29
134+50.00	145	88	13	88	14
135+00.00	132	90	16	90	17
135+50.00	143	88	16	88	10
136+00.00	147	89	10	89	11
136+50.00	135	129	18	129	22
136+74.24	33	40	7	40	7
SUBTOTALS	6097	2727	1069	2755	998
TOTALS	12948	5434	2300	3285	998

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EARTHWORK SUMMARY AND TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 9 / 336

EARTHWORK QUANTITIES

STATION	ROCKVAM ROAD				
	2106	2106	2106	2106	2574
	EXCAVATION - COMMON	EXCAVATION - SUBGRADE	COMMON EMBANKMENT	SELECT GRANULAR	ORGANIC TOPSOIL BORROW (CV)
	CU YD	CU YD	CU YD	CU YD	CU YD
220+25.00					
220+50.00	18		4		7
221+00.00	31		13		18
221+50.00	34		13		18
221+74.27	15		5		9
TOTALS	98		35		52

EARTHWORK QUANTITIES

STATION	PARK LN SE				
	2106	2106	2106	2106	2574
	EXCAVATION - COMMON	EXCAVATION - SUBGRADE	COMMON EMBANKMENT	SELECT GRANULAR	ORGANIC TOPSOIL BORROW (CV)
	CU YD	CU YD	CU YD	CU YD	CU YD
400+74.40					
401+00.00	7	6	2	6	4
401+50.00	14	12	4	12	7
401+98.43	16	11	1	11	5
TOTALS	37	29	7	29	16

EARTHWORK QUANTITIES

STATION	MAPLETON AVE NE				
	2106	2106	2106	2106	2574
	EXCAVATION - COMMON	EXCAVATION - SUBGRADE	COMMON EMBANKMENT	SELECT GRANULAR	ORGANIC TOPSOIL BORROW (CV)
	CU YD	CU YD	CU YD	CU YD	CU YD
370+00.00					
370+39.89	26	19	1	19	3
TOTALS	26	19	1	19	3

EARTHWORK QUANTITIES

STATION	DICKSON AVE NE				
	2106	2106	2106	2106	2574
	EXCAVATION - COMMON	EXCAVATION - SUBGRADE	COMMON EMBANKMENT	SELECT GRANULAR	ORGANIC TOPSOIL BORROW (CV)
	CU YD	CU YD	CU YD	CU YD	CU YD
430+00.00					
430+14.92	33	10	2	10	7
TOTALS	33	10	2	10	7

EARTHWORK QUANTITIES

STATION	SUBGRADE CORRECTION		
	2106	2106	2106
	EXCAVATION - MUCK	COMMON EMBANKMENT	SELECT GRANULAR EMBANKMENT MOD 10% (CV)
	CU YD	CU YD	CU YD
113+93.79			
114+00.00	19	1	18
114+50.00	365	22	343
115+00.00	389	27	363
115+50.00	380	36	343
116+00.00	399	40	359
116+50.00	422	46	376
117+00.00	473	61	412
117+08.71	46	6	39
119+43.25			
119+50.00	1	1	1
120+00.00	83	18	65
120+50.00	219	31	188
121+00.00	373	45	327
121+08.40	37	5	32
135+72.75			
135+80.00	33	3	30
136+00.00	201	17	184
136+50.00	765	35	730
136+58.52	90	2	87
TOTALS	4295	396	3897

EARTHWORK QUANTITIES

STATION	GROUND IMPROVEMENT			
	2106	2106	2106	2106
	EXCAVATION - COMMON	EXCAVATION - SUBGRADE	COMMON EMBANKMENT	LIGHT-WEIGHT AGGREGATE
	CU YD	CU YD	CU YD	CU YD
105+71.09				
105+80.00	7	42	7	42
106+00.00	44	208	44	208
106+50.00	101	552	101	552
107+00.00	65	525	65	525
107+50.00	83	508	83	508
108+00.00	108	491	108	491
108+50.00	111	475	111	475
109+00.00	110	460	110	460
109+50.00	114	454	114	454
109+58.25	9	36	9	36
TOTALS	752	3751	752	3751

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EARTHWORK SUMMARY AND TABULATIONS

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SHEET 10 / 336

SOIL / CONSTRUCTION NOTES

1. USE 1:20 TAPERS WHERE CHANGING SUBCUT DEPTH.

2. EXCAVATION - SUBGRADE SHALL BE BACKFILLED IMMEDIATELY AFTER EXCAVATION TO HELP OFFSET ANY STABILITY PROBLEMS DUE TO WATER SEEPAGE.

3. ALL EXCAVATED MATERIAL THAT IS UNSUITABLE OR NOT REQUIRED FOR EMBANKMENT CONSTRUCTION OR FOR TOPSOIL, INCLUDING BITUMINOUS SURFACING AND CONCRETE ITEMS, SHALL BE DISPOSED OF BY THE CONTRACTOR AT NO EXPENSE TO THE COUNTY, OUTSIDE OF THE RIGHT OF WAY, SUBJECT TO PROVISIONS OF 2106.3.J.

4. WHERE PROPOSED ROADWAY MATCHES INPLACE ROADWAYS, PROVIDE A VERTICAL CUT THROUGH THE INPLACE SURFACING TO THE BOTTOM OF THE PROPOSED BASE AND THEN A 1:20 TAPER INTO THE BOTTOM OF THE EXCAVATION - SUBGRADE. THE EXCAVATION SHALL BE BACKFILLED PROMPTLY TO AVOID UNDERMINING OF THE INPLACE PAVEMENT.

5. SUBGRADE FOR WALKWAYS, BIKEWAYS, DRIVEWAYS, PARKING LOTS, GRADING AND AGGREGATE ITEMS ON TEMPORARY WORK AND ALL IMPERVIOUS-SURFACED AREAS SHALL BE UNIFORMLY COMPACTED AS PER THE QUALITY COMPACTION REQUIREMENTS OF 2106.3.G.2.

6. THE ROAD CORE (AS DESCRIBED IN 1103) SHALL BE UNIFORMLY COMPACTED PER THE PENETRATION INDEX (PI) REQUIREMENTS IN 2106.3.G.3 FOR MATERIALS MEETING THE REQUIREMENTS OF 3149.2.B, GRANULAR MATERIALS. THE ROAD CORE (AS DESCRIBED IN 1103) SHALL BE UNIFORMLY COMPACTED PER THE PENETRATION INDEX (PI) REQUIREMENTS IN 2106.3.G.3 FOR MATERIALS NOT MEETING THE REQUIREMENTS OF 3149.2.B, GRANULAR MATERIALS.

7. ROADWAY AGGREGATE BASE MATERIALS SHALL BE COMPACTED AS PER THE "PENETRATION INDEX COMPACTION METHOD" AS PER THE DETAILED DYNAMIC CONE PENETROMETER TEST PROCEDURE DESCRIBED IN MNDOT 2211.3.D.2.C. AGGREGATE BASE MATERIALS IN WALKWAYS, DRIVEWAYS, PARKING LOTS, AND ALL IMPERVIOUS-SURFACED AREAS (INCLUDING CONCRETE PAVERS) SHALL BE UNIFORMLY COMPACTED AS PER THE QUALITY COMPACTION REQUIREMENTS OF 2106.3.G.2.

8. BITUMINOUS ROADWAY PAVEMENTS SHALL BE COMPACTED AS PER THE MAXIMUM DENSITY REQUIREMENTS IN 2360.3.D.1. BITUMINOUS WALKWAYS, BIKEWAYS, DRIVEWAYS, OR PARKING LOTS SHALL BE COMPACTED AS PER THE REQUIREMENTS DETAILED IN 2360.3.D.2, ORDINARY COMPACTION.

9. STORM SEWER CONSTRUCTION SHALL FOLLOW APPLICABLE MNDOT SPECIFICATIONS. WATERMAIN AND SANITARY SEWER CONSTRUCTION SHALL FOLLOW APPLICABLE CITY SPECIFICATIONS FOR INSTALLATION , AND MNDOT BACKFILL SPECIFICATIONS.

10. TOE OF FILL, CUT RUNOUTS AND THE TOP EDGE OF THE BACKSLOPES SHALL BE ROUNDED REGARDLESS OF THE SECTION USED ON THE CROSS SECTION SHEETS.

11. UNSUITABLE GRADING MATERIAL SHALL BE PLACED OUTSIDE OF 1 TO 1.5 SLOPE EXTENDING DOWN AND OUTWARD FROM THE BERM P.I. IN AREAS WITH WALK UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

12. BACKFILL FOR EXCAVATION - SUBGRADE SHALL BE SELECT GRANULAR BORROW MODIFIED TO 8% PASSING THE NO. 200 SIEVE FOR THE 30" DEPTH ROAD SECTION AREAS AS DEPICTED IN THE TYPICAL SECTIONS. EXCAVATED MATERIALS MAY BE USED IN THE ROADWAY EMBANKMENT IF GRANULAR OR OUTSIDE OF THE ROADWAY OR REMOVED OFF SITE BY THE CONTRACTOR AT NO ADDITIONAL COST.

13. ALL DRIVEWAYS OVER 14 FEET IN WIDTH SHALL BE BUILT IN HALFS, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

14. RELOCATION OF EXISTING UTILITIES WILL BE REQUIRED AS A RESULT OF THIS PROJECT'S CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO IDENTIFY POTENTIAL UTILITY CONFLICTS, VERIFY UTILITY CONFLICTS AND COORDINATE WITH THE RESPECTIVE COMPANIES TO AVOID UNNECESSARY DELAYS. NO COMPENSATION WILL BE MADE FOR DELAYS ASSOCIATED WITH THE CONTRACTORS FAILURE TO ADEQUATELY COORDINATE WITH UTILITY COMPANIES.

15. ALL TOPSOIL STRIPPING WILL BE CONSIDERED TO BE EXCAVATION - COMMON. ALL SLOPE DRESSING/TOPSOIL SHALL BE ORGANIC TOPSOIL BORROW PAID AS COMPACT VOLUME.

16. PROVIDE A FULL DEPTH SAWCUT WHERE PLACING NEW PAVEMENT ADJACENT TO INPLACE PAVEMENT TO ENSURE UNIFORM JOINT.

17. THE CONTRACTOR SHALL NOT USE TEMPORARY EASEMENT AREAS FOR STORING OF MATERIALS OR EQUIPMENT OR ANY OTHER USES NOT APPROVED BY ENGINEER IN WRITING.

18. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH PROVIDING AND MAINTAINING TEMPORARY ACCESS DURING CONSTRUCTION FOR ALL PROPERTY OWNERS ADJACENT TO THE PROJECT. THIS SHALL BE INCIDENTAL.

19. CONTRACTOR SHALL IDENTIFY INVERT ELEVATIONS FOR EXISTING STRUCTURES PRIOR TO ANY STORM OR SANITARY SEWER CONSTRUCTION. THIS SHALL BE INCIDENTAL.

20. COMPACT GRANULAR MATERIALS USED FOR BEDDING AND BACKFILL OF 2503 PIPE SEWERS IN ACCORDANCE WITH QUALITY COMPACTION REQUIREMTNS IN 2106 "EXCAVATION AND EMBANKMENT - COMPACTED VOLUME METHOD"

21. PERMIT AND INSPECTION REQUIRED FOR ALL PRIVATE STORM, SANITARY, WATER SERVICE, AND RAIN LEADER REMOVAL, CONNECTIONS, OR MODIFICATIONS.

22. AREAS OF UNSUITABLE SOILS EXIST ON THE PROJECT. SEE TYPICAL SECTIONS AND PROFILE FOR AREAS OF CORRECTION. ADDITIONAL AREAS MAY BE IDENTIFIED FOR CORRECTION BY THE ENGINEER.

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

DESIGN BY:	R. MANKE
CAD BY:	R. MANKE
CHECKED BY:	S. PARK
LAST REVISION:	/ /

SOIL AND CONSTRUCTION NOTES

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 11 / 336

MISCELLANEOUS REMOVAL TABULATION

A

STATION TO STATION		2104 REMOVE BITUMINOUS PAVEMENT	2104 REMOVE BITUMINOUS DRIVEWAY PAVEMENT	2104 REMOVE GRAVEL DRIVEWAY	2104 REMOVE BITUMINOUS CURB	2104 REMOVE CURB & GUTTER	2104 REMOVE CONCRETE PARKING STOPS	2104 REMOVE CONCRETE WALK	2104 REMOVE BRICK PAVERS	2104 REMOVE CONCRETE DRIVEWAY PAVEMENT	2104 SAWING BITUMINOUS PAVEMENT (FULL DEPTH) (1)	2104 REMOVE BRICK SIDEWALK	2101 CLEARING	2101 GRUBBING	2101 REMOVE LANDSCAPE STRUCTURES	REMARKS
SAP 027-651-011		SQ YD	SQ YD	SQ YD	LIN FT	LIN FT	EACH	SQ FT	SQ FT	SQ YD	LIN FT	SQ FT	EACH	EACH	LIN FT	
CSAH 51 (SUNSET DR)																
100+08.15	106+00.00	3414				1931		10431		55	318	2298	11	13	50	
106+00.00	113+00.00	4396	392	298		154	6	487	493	315	841		28	28	341	
113+00.00	120+00.00	3084	898	384	419					119	425		31	34	274	
120+00.00	127+00.00	2605	1259	271	352			63		54	389		39	41	292	
127+00.00	134+00.00	3058	386	178	565						189		15	17		
134+00.00	136+75.38	1487	146		50	63					243		7	10		
SAP 027-619-029																
CSAH 19 (SHADYWOOD RD)																
200+30.00	205+60.00		49		15						28					
205+60.00	209+61.80				239											
SAP 027-651-011 TOTAL		18044	3081	1131	1386	2148	6	10981	493	543	2405	2298	131	143	958	
SAP 027-619-029 TOTAL			49		254						28					
PROJECT TOTAL		18044	3130	1131	1640	2148	6	10981	493	543	2433	2298	131	143	958	

NOTES:

(1) ANY SAWING BITUMINIOUS PAVEMENT FULL DEPTH SHALL BE PAID FOR AS SAWING CONCRETE PAVEMENT FULL DEPTH

(2) SAWING OF CONCRETE WALK OR BITUMINIOUS WALK SHALL BE INCIDENTAL. FOR INFORMATION ONLY

(3) FOR REMOVAL OF BUSHES / HEDGES

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

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CAD BY: R. MANKE
CHECKED BY: S. PARK
LAST REVISION: / /

QUANTITY TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 12 / 336

MISCELLANEOUS REMOVAL TABULATION

A

STATION TO STATION		2104 REMOVE BITUMINOUS WALK	2104 REMOVE BOULDER	2104 SALVAGE BOULDER	2104 REMOVE POST	2104 SAWING CONCRETE WALK (2)	2104 REMOVE CHAIN LINK FENCE	2104 REMOVE FENCE	2104 REMOVE WOOD FENCE	2104 REMOVE CONCRETE RETAINING WALL	2104 REMOVE STONE RETAINING WALL	2104 REMOVE CONCRETE BLOCK WALL	2104 REMOVE WOOD RETAINING WALL	2511 PLACE BOULDER	REMARKS
SAP 027-651-011		SQ FT	EACH	EACH	EACH	EACH	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	EACH	
CSAH 51 (SUNSET DR)															
100+08.15	106+00.00	1321	1	12		219								12	
106+00.00	113+00.00		4		11	16	150	51	44		118	112	36		
113+00.00	120+00.00		2		7		55					24			
120+00.00	127+00.00		2		10				24	59	102	100	71		
127+00.00	134+00.00		9		2		475		370		47	57			
134+00.00	136+75.38		2		2		106								
SAP 027-619-029															
CSAH 19 (SHADYWOOD DR)															
200+30.00	205+60.00														
205+60.00	209+61.80														
SAP 027-651-011 TOTAL		1321	29	2	32	235	786	51	438	59	267	292	106	2	
SAP 027-619-029 TOTAL															
PROJECT TOTAL		1321	29	2	32	235	786	51	438	59	267	292	106	2	

NOTES:

(1) ANY SAWING CONCRETE PAVEMENT FULL DEPTH SHALL BE PAID FOR AS SAWING BITUMINOUS PAVEMENT FULL DEPTH

(2) SAWING OF CONCRETE WALK OR BITUMINIOUS WALK SHALL BE INCIDENTAL. FOR INFORMATION ONLY

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QUANTITY TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 13 / 336

CONCRETE TABULATIONS — B

STATION TO STATION		2521 4" CONCRETE WALK	2521 6" CONCRETE WALK (1)	2531 6" CONCRETE DRIVEWAY PAVEMENT	2531 8" CONCRETE DRIVEWAY PAVEMENT	2531 CONCRETE CURB & GUTTER DESIGN B612	2531 CONCRETE CURB & GUTTER DESIGN B412	2531 CONCRETE CURB & GUTTER DESIGN B624	2531 CONCRETE CURB & GUTTER DESIGN D424	CONCRETE CURB & GUTTER DESIGN B424	2531 CONCRETE SILL	2531 TRUNCATED DOMES
SAP 027-651-011		SQ FT	SQ FT	SQ YD	SQ YD	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	SQ FT
CSAH 51 (SUNSET DR)												
100+08.15	106+00.00		14447			865		1529			1128	323
106+00.00	113+00.00	906	7690	126	355		284	1500	97		980	97
113+00.00	120+00.00		3585	191		64		1541		30	796	113
120+00.00	127+00.00	65	4171	123				1353		51	683	
127+00.00	134+00.00		4168		62			1575			722	84
134+00.00	136+75.38		1411		3			658			258	48
SAP 027-619-029												
CSAH 19 (SHADYWOOD RD)												
200+30.00	205+60.00											
205+60.00	209+61.80											
SAP 027-651-011 TOTAL		970	35471	440	419	929	284	8155	97	81	4567	663
SAP 027-619-029 TOTAL												
PROJECT TOTAL		970	35471	440	419	929	284	8155	97	81	4567	663

NOTES: (1) DRILL AND GROUT REINFORCEMENT BAR (EPOXY COATED) ARE INCIDENTAL

SIDEWALK V CURB — C

STATION TO STATION		2531 CONCRETE CURB DESIGN V 4" HIGH LIN FT	6" HIGH LIN FT	8" HIGH LIN FT	9" HIGH LIN FT	10" HIGH LIN FT	REMARKS
SAP -027-651-011							
CSAH 51 (SUNSET DR)							
100+08	106+00					16	
106+00	113+00	13	38			83	
113+00	120+00						
120+00	127+00						
127+00	134+00			20		66	
134+00	136+75		14			18	
SAP 027-619-029							
CSAH 19 (SHADYWOOD RD)							
200+30	205+60						
205+60	209+61						
SAP 027-651-011 TOTAL		268					
SAP 027-619-029 TOTAL							
PROJECT TOTAL		268					(1)

NOTES: (1) TO BE PAID FOR AS CONCRETE CURB DESIGN V

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER — 49073 LICENSE NO. — / / DATE

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QUANTITY TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 14 / 336

SURFACING MATERIAL TABULATION (D)

STATION TO STATION		2118 AGGREGATE SURFACING (CV) CLASS 2 (1)	2211 AGGREGATE BASE (CV) CLASS 6 (1)	2232 MILL BITUMINOUS SURFACE (2")	2360 TYPE SP 9.5 WEAR COURSE MIX (2,C) (2)(3)	2360 TYPE SP 12.5 WEAR COURSE MIX (2,F)	2360 TYPE SP 12.5 NON WEAR COURSE MIX (2,B) (3)	2360 TYPE SP 9.5 WEAR COURSE MIX (3,C)
SAP 027-651-011		CU YD	CU YD	SQ YD	TON	TON	TON	CU YD
CSAH 51 (SUNSET DR)								
100+08.15	106+00.00		1304		23	737	553	
106+00.00	113+00.00		1030		179	597	520	
113+00.00	120+00.00		1062		205	582	436	
120+00.00	127+00.00		951		202	527	396	
127+00.00	134+00.00	22	1123		48	616	492	
134+00.00	136+75.38		539		18	317	251	
ROCKVAM ROAD								
220+00.00	222+30.05	1	1			29	22	
SAP 027-619-029								
CSAH 19 (SHADYWOOD RD)								
200+30.00	205+60.00	7		2297				260
205+60.00	209+61.80	4		1793				203
SAP 027-651-011 TOTAL		23	6010		675	3405	2670	
SAP 027-619-029 TOTAL		11		4090				463
PROJECT TOTAL		34	6010	4090	675	3405	2670	463

NOTES: (1) PROJECT ROADWAY, C&G AGGREGATE BASE, ROCKVAM RD, AND LORD FLETCHERS PARKING LOT
(2) INCLUDES 10' BITUMINOUS TRAIL QUANTITIES
(3) INCLUDES DRIVEWAY QUANTITIES

CONCRETE STAIRWAY INFORMATION CHART (E)

STAIRWAY LOCATION	STATION	STAIRWAY TYPE	2104 REMOVE CONCRETE STEPS	CONSTRUCT STEPS	2411 CONCRETE STEPS - DEISIGN SPECIAL
SAP 027-651-011			EACH	NO. OF RISERS	LIN FT
CSAH 51 (SUNSET DR)					
2259 SUNSET DR	110+13	1	18		
3841 SUNSET DR	123+75	1	6 (1)	5	24
SAP 027-651-011 TOTAL			24	5	24
SAP 027-619-029 TOTAL					
PROJECT TOTAL			24	5	24

GENERAL NOTES: STEP WIDTH TYPE 1 AND 2 = 5', TYPE 3= 4'
NOTES: (1) INCLUDES REMOVAL OF HANDRAIL-INCIDENTAL

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QUANTITY TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 15 / 336

EROSION CONTROL TABULATIONS — F

STATION TO STATION		2573 STORM DRAIN INLET PROTECTION	2573 SEDIMENT CONTROL LOG TYPE COMPOST	2573 FLOATATION SILT CURTAIN, TYPE STILL WATER	2575 RAPID STABILIZATION METHOD 3
SAP 027-651-011		EACH	LIN FT	LIN FT	ACRE
CSAH 51 (SUNSET DR)					
100+08.15	106+00.00	21	1600		0.2
106+00.00	113+00.00	18	1924	55	0.4
113+00.00	120+00.00	16	1872		0.5
120+00.00	127+00.00	2	1502		0.6
127+00.00	134+00.00	15	1790		0.7
134+00.00	136+75.38	3	567	64	0.2
SAP 027-619-029					
CSAH 19 (SHADYWOOD RD)					
200+30.00	205+60.00		55		
205+60.00	209+61.80				0.1
SAP 027-651-011 TOTAL		75	9238	119	2.5
SAP 027-619-029 TOTAL			55		0.1
PROJECT TOTAL		75	9293	119	2.6

TURF ESTABLISHMENT TABULATIONS — G

STATION TO STATION		2574 FERTILIZER TYPE 3 (22-5-10) (4)	2574 FERTILIZER TYPE 4 (18-1-8) (5)	2574 SOIL BED PREPARATION	2574 SUBSOILING	2575 SOUTHERN BOULEVARD (1)	2575 TURFGRASS (2)	2575 SEEDING	2575 WET DITCH (3)
SAP 027-651-011		POUND	POUND	ACRE	ACRE	POUND	POUND	ACRE	POUND
CSAH 51 (SUNSET DR)									
100+08.15	106+00.00	46		0.2	0.2	2	46	0.2	
106+00.00	113+00.00	74		0.4	0.4	30	36	0.4	
113+00.00	120+00.00	101		0.5	0.5	43	47	0.5	
120+00.00	127+00.00	120		0.6	0.6	59	45	0.6	
127+00.00	134+00.00	120	6	0.6	0.6	50	57	0.6	1
134+00.00	136+75.38	29	2	0.2	0.2	10	16	0.2	1
SAP 027-619-029									
CSAH 19 (SHADYWOOD RD)									
200+30.00	205+60.00								
205+60.00	209+61.80	3				2			
SAP 027-651-011 TOTAL		481	8	2.5	2.5	193	239	2.5	2
SAP 027-619-029 TOTAL		3				2			
PROJECT TOTAL		484	8	2.5	2.5	195	239	2.5	2

NOTES: (1) SEED MIX SOUTHERN BOULEVARD APPLIED AT 160 POUNDS PER ACRE
(2) SEED MIX TURFGRASS APPLIED AT 200 POUNDS PER ACRE
(3) SEED MIX WET DITCH APPLIED AT 20 POUNDS PER ACRE
(4) FERTILIZER TYPE 3 (22-5-10) APPLIED AT 200 POUNDS PER ACRE
(5) FERTILIZER TYPE 4 (18-1-8) APPLIED AT 120 POUNDS PER ACRE

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QUANTITY TABULATIONS

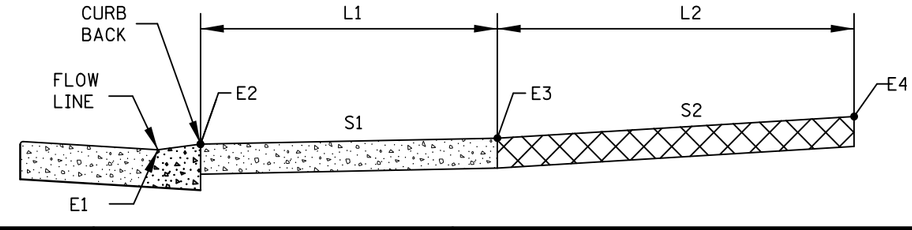
CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 16 / 336

DRIVEWAY TABULATION

H

STATION	SIDE	E1	E2	L1 FT	S1 %	E3	L2 FT	S2 %	E4	EXISTING SLOPE %	PARCEL ADDRESS
SAP 027-651-011											
107+28	LEFT	936.94	936.98	6.00	1.50	937.08	35.47	-10.00	933.53		4068 SUNSET DRIVE
107+52	LEFT	936.48	936.52	6.00	1.50	936.62	35.47	-8.75	933.51		
107+35	RIGHT	936.65	936.69	6.00	1.50	936.79	9.24	6.75	937.41		4061 SUNSET DRIVE
107+59	RIGHT	936.20	936.24	6.00	1.50	936.34	9.77	5.21	936.85		
107+83	RIGHT	935.91	935.95	6.00	1.50	936.05	21.01	2.19	936.51		2291 LILAC ROAD
108+07	RIGHT	935.78	935.81	6.00	1.50	935.91	21.65	5.43	937.08		
108+99	RIGHT	936.83	936.87	6.00	1.50	936.97	23.28	4.33	937.98		4029 SUNSET DRIVE
109+23	RIGHT	937.14	937.18	6.00	1.50	937.28	23.03	4.43	938.30		
109+16	LEFT	937.07	937.11	6.00	1.50	937.21	15.53	-5.71	936.32		4044 SUNSET DRIVE
109+40	LEFT	937.28	937.32	6.00	1.50	937.42	15.77	-7.37	936.26		
109+32	RIGHT	937.22	937.28	6.00	1.50	937.38	12.36	4.16	937.90		4029 SUNSET DRIVE - STORAGE
109+74	RIGHT	937.33	937.39	6.00	1.75	937.50	12.53	8.05	938.51		
109+90	LEFT	936.97	937.01	3.66	1.00	937.05	7.95	-10.15	936.25		4026 SUNSET DRIVE
110+10	LEFT	936.68	936.72	3.66	1.00	936.76	8.15	-9.96	935.95		
110+81	LEFT	935.68	935.72	4.33	7.50	936.10	18.87	-1.22	935.87		4022 SUNSET DRIVE
110+93	LEFT	935.48	935.53	4.33	7.50	935.90	18.99	-0.90	935.73		
111+12	LEFT	935.17	935.21	4.33	6.00	935.51	19.18	-6.54	934.25		4018 SUNSET DRIVE
111+24	LEFT	934.96	935.01	4.33	6.00	935.30	19.30	-6.14	934.12		
111+38	LEFT	934.72	934.77	4.29	6.00	935.06	19.46	-3.47	934.39		4014 SUNSET DRIVE
111+51	LEFT	934.51	934.55	4.29	6.00	934.85	19.49	-2.17	934.43		
111+86	LEFT	933.90	933.95	4.33	6.00	934.24	20.71	-2.59	933.71		4010 SUNSET DRIVE
111+99	LEFT	933.69	933.73	4.33	6.00	934.03	21.74	-2.56	933.47		
112+02	RIGHT	933.63	933.68	6.00	1.50	933.78	48.93	5.99	936.71		3391 SUNSET DRIVE
112+14	RIGHT	933.44	933.48	6.00	1.50	933.58	49.74	6.19	936.66		
112+17	LEFT	933.38	933.42	4.33	6.00	933.72	22.28	-2.62	933.14		4000 SUNSET DRIVE
112+29	LEFT	933.21	933.25	4.33	6.00	933.55	22.25	-3.14	932.85		
112+61	RIGHT	932.93	932.97	6.00	1.50	933.07	40.98	2.81	934.22		3983 SUNSET DRIVE
112+73	RIGHT	932.88	932.92	6.00	1.50	933.02	41.91	2.71	934.16		
113+16	RIGHT	932.95	932.99	6.00	1.50	933.09	19.20	2.62	933.59		3975 SUNSET DRIVE
113+28	RIGHT	932.99	933.03	6.00	1.50	933.13	19.36	1.55	933.43		
113+26	LEFT	932.98	933.02	4.33	1.50	933.10	28.91	-4.88	931.69		3990 SUNSET DRIVE
113+38	LEFT	933.02	933.06	4.33	1.50	933.14	28.91	-5.00	931.69		
113+93	LEFT	933.21	933.26	4.33	1.50	933.33	30.27	-4.32	932.02		3980 SUNSET DRIVE
114+05	LEFT	933.26	933.30	4.33	1.50	933.37	30.27	-5.00	931.86		



Hennepin

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.

AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

DESIGN BY:	R. MANKE
CAD BY:	R. MANKE
CHECKED BY:	S. PARK
LAST REVISION:	01/17/2024

QUANTITY TABULATIONS

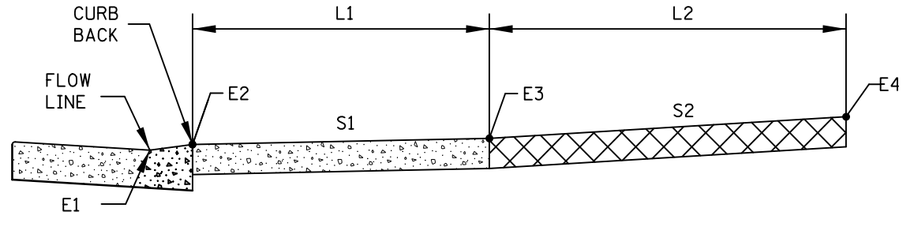
CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 17 / 336

DRIVEWAY TABULATION

H

STATION	SIDE	E1	E2	L1 FT	S1 %	E3	L2 FT	S2 %	E4	EXISTING SLOPE %	PARCEL ADDRESS
SAP 027-651-011											
114+68	LEFT	933.48	933.52	4.33	1.50	933.60	39.52	-4.64	931.76		3960 SUNSET DRIVE
114+80	LEFT	933.52	933.56	4.33	1.50	933.64	39.53	-5.00	931.66		
115+20	LEFT	933.66	933.70	4.33	1.50	933.78	26.50	-6.87	931.96		3950 SUNSET DRIVE
115+44	LEFT	933.75	933.79	4.33	1.50	933.86	26.50	-9.84	931.25		
116+52	LEFT	934.21	934.26	4.33	1.50	934.33	43.02	-5.07	932.15		3930 SUNSET DRIVE
116+64	LEFT	934.32	934.36	4.33	1.50	934.44	43.05	-5.00	932.29		
117+18	LEFT	934.89	934.93	4.33	1.50	935.00	21.71	2.41	935.52		3920 SUNSET DRIVE
117+30	LEFT	935.06	935.10	4.33	1.50	935.18	22.88	1.76	935.58		
117+48	LEFT	935.50	935.54	4.33	3.00	935.69	23.67	6.34	937.19		3910 SUNSET DRIVE
117+60	LEFT	935.67	935.72	4.33	3.00	935.87	23.53	6.84	937.47		
117+92	LEFT	936.16	936.22	4.33	7.00	936.56	61.05	11.00	943.28		3900 SUNSET DRIVE
118+04	LEFT	936.33	936.39	4.33	8.00	936.79	61.05	10.45	943.17		
118+23	LEFT	936.63	936.68	4.33	6.00	936.98	16.28	7.37	938.18		3896 SUNSET DRIVE
118+35	LEFT	936.81	936.85	4.33	6.00	937.15	15.92	6.88	938.25		
118+79	LEFT	937.50	937.55	4.33	5.00	937.80	22.02	5.18	938.94		3890 SUNSET DRIVE
118+91	LEFT	937.74	937.78	4.33	5.00	938.03	22.02	4.16	938.95		
119+49	LEFT	939.28	939.32	4.33	2.00	939.42	16.09	2.95	939.90		3884 SUNSET DRIVE
119+61	LEFT	939.68	939.72	4.33	2.00	939.82	16.13	2.14	940.16		
119+76	LEFT	940.16	940.20	4.33	1.50	940.28	16.32	3.31	940.82		3880 SUNSET DRIVE
119+88	LEFT	940.46	940.60	4.33	1.50	940.68	16.88	1.05	940.86		
120+12	LEFT	941.37	941.41	4.33	1.50	941.48	28.11	2.00	942.04		3878 SUNSET DRIVE
120+24	LEFT	941.77	941.81	4.33	1.50	941.89	28.08	1.20	942.22		
120+12	RIGHT	941.40	941.44	6.00	2.50	941.60	24.17	-2.73	940.94		3877 SUNSET DRIVE
120+24	RIGHT	941.80	941.84	6.00	2.50	942.01	24.03	-4.50	940.93		
120+53	LEFT	942.83	942.87	24.59	7.13	944.63					3872 SUNSET DRIVE
120+65	LEFT	943.24	943.28	24.63	7.66	945.16					
120+95	LEFT	944.26	944.30	4.33	5.00	944.55	24.13	12.06	947.46		3866 SUNSET DRIVE
121+07	LEFT	944.70	944.75	4.33	5.00	944.99	24.14	10.93	947.63		
121+00	RIGHT	944.25	944.29	6.00	1.50	944.39	26.94	1.47	944.79		3865 SUNSET DRIVE
121+12	RIGHT	944.70	944.74	6.00	1.50	944.84	26.94	1.22	945.17		
121+55	RIGHT	946.58	946.62	6.00	1.48	946.72	13.63	5.12	947.42		3859 SUNSET DRIVE
121+67	RIGHT	947.09	947.13	6.00	1.50	947.23	13.60	3.53	947.71		



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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

DESIGN BY:	R. MANKE
CAD BY:	R. MANKE
CHECKED BY:	S. PARK
LAST REVISION:	/ /

QUANTITY TABULATIONS

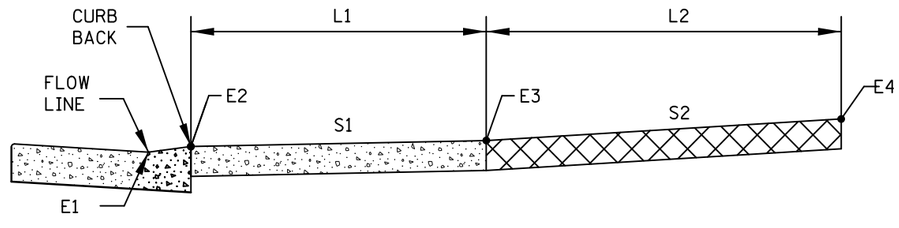
CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 18 / 336

DRIVEWAY TABULATION

H

STATION	SIDE	E1	E2	L1 FT	S1 %	E3	L2 FT	S2 %	E4	EXISTING SLOPE %	PARCEL ADDRESS
SAP 027-651-011											
121+57	LEFT	946.65	946.70	4.33	1.50	946.77	21.88	13.19	949.66		3860 SUNSET DRIVE
121+69	LEFT	947.17	947.21	4.33	1.50	947.28	21.75	10.53	949.57		
122+55	LEFT	950.06	950.10	4.33	7.00	950.45	17.14	11.05	952.34		3854 SUNSET DRIVE
122+67	LEFT	950.34	950.39	4.33	7.00	950.74	17.17	11.13	952.65		
122+56	RIGHT	950.09	950.13	6.00	1.50	950.23	13.33	7.58	951.24		3853 SUNSET DRIVE
122+68	RIGHT	950.37	950.41	6.00	1.50	950.51	13.97	8.21	951.66		
123+15	LEFT	951.17	951.21	4.33	1.50	951.28	17.16	5.48	952.22		3848 SUNSET DRIVE
123+27	LEFT	951.25	951.30	4.33	1.50	951.37	17.20	4.73	952.18		
123+27	RIGHT	951.36	951.40	6.00	1.52	951.50	13.14	4.84	952.14		3847/3841 SUNSET DRIVE
123+39	RIGHT	951.48	951.52	6.00	1.51	951.62	13.17	6.47	952.47		
123+58	LEFT	951.45	951.49	4.33	1.50	951.57	19.08	2.36	952.02		3842 SUNSET DRIVE
123+70	LEFT	951.50	951.54	4.33	1.50	951.62	19.11	1.58	951.92		
123+96	RIGHT	951.64	951.69	6.00	1.50	951.79	46.14	11.39	957.04		3835 SUNSET DRIVE
124+08	RIGHT	951.60	951.64	6.00	1.50	951.74	46.39	11.68	957.16		
124+22	LEFT	951.42	951.46	4.33	1.50	951.54	7.48	1.81	951.67		3836 SUNSET DRIVE
124+34	LEFT	951.33	951.37	4.33	1.50	951.45	7.51	3.15	951.68		
124+65	LEFT	950.91	950.96	4.33	1.50	951.03	21.38	-19.76	946.81		3830 SUNSET DRIVE
124+77	LEFT	950.71	950.75	4.33	1.50	950.82	21.38	-18.73	946.82		
125+18	RIGHT	949.94	949.98	6.00	1.50	950.08	51.10	8.91	954.63		3801 SUNSET DRIVE
125+30	RIGHT	949.63	949.67	6.00	1.50	949.77	46.18	11.50	955.08		
125+22	LEFT	949.69	949.74	4.33	0.65	949.77	7.77	-15.61	948.56		3824 SUNSET DRIVE
125+34	LEFT	949.38	949.43	4.33	0.65	949.46	7.81	-11.52	948.56		
126+13	LEFT	947.39	947.43	5.77	2.03	947.56	29.59	-15.72	942.91		3818 SUNSET DRIVE
126+27	LEFT	947.01	947.05	5.95	2.09	947.19	30.89	-12.81	943.23		
126+42	LEFT	946.63	946.67	4.33	1.50	946.75	12.55	-11.47	945.31		3812 SUNSET DRIVE
126+54	LEFT	946.33	946.37	4.33	1.50	946.45	14.48	-10.62	944.91		
126+59	LEFT	946.20	946.24	4.33	1.50	946.31	14.62	-4.15	945.71		3806 SUNSET DRIVE
126+71	LEFT	945.90	945.94	4.33	1.50	946.01	12.45	-1.12	945.87		
128+14	RIGHT	942.17	942.21	6.00	1.50	942.31	25.39	1.43	942.67		3791 SUNSET DRIVE
128+26	RIGHT	941.87	941.91	6.00	1.50	942.01	32.50	2.03	942.67		



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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

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CHECKED BY:	S. PARK
LAST REVISION:	/ /

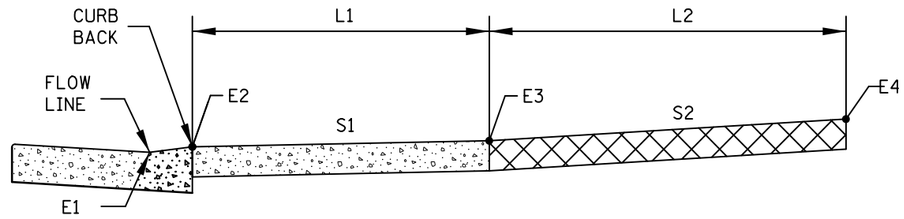
QUANTITY TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 19 / 336

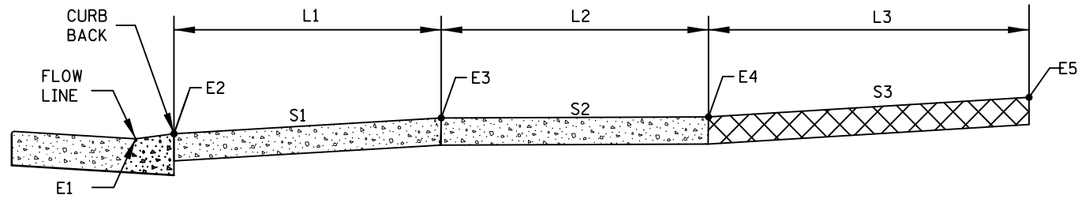
DRIVEWAY TABULATION — H

STATION	SIDE	E1	E2	L1 FT	S1 %	E3	L2 FT	S2 %	E4	EXISTING SLOPE %	PARCEL ADDRESS
SAP 027-651-011											
129+98	LEFT	938.31	938.35	4.33	1.50	938.42	37.53	-8.00	935.42		3746 SUNSET DRIVE - SOUTH
130+22	LEFT	938.19	938.23	4.33	1.50	938.30	37.55	-6.88	935.72		
131+95	LEFT	937.28	937.33	4.33	8.00	937.73	10.55	12.29	939.02		3746 SUNSET DRIVE
132+18	LEFT	937.03	937.08	4.33	8.00	937.48	8.69	11.29	938.46		
132+67	LEFT	936.12	936.16	4.33	1.50	936.23	8.85	-1.20	936.13		3746 SUNSET DRIVE - NORTH
132+91	LEFT	935.56	935.60	4.33	1.50	935.68	9.15	1.03	935.77		
133+78	RIGHT	934.81	934.85	6.00	1.50	934.95	10.56	4.38	935.41		3731 SUNSET DRIVE
134+02	RIGHT	934.95	934.99	6.00	1.50	935.09	9.54	4.69	935.53		
135+39	RIGHT	936.26	936.30	6.00	1.50	936.40	19.28	7.82	937.91		3701 SUNSET DRIVE
135+63	RIGHT	936.63	936.68	6.00	1.50	936.78	20.39	7.00	938.20		



DRIVEWAY TABULATION — H

STATION	SIDE	E1	E2	L1 FT	S1 %	E3	L2 FT	S2 %	E4	L3 FT	S3 %	E5	EXISTING SLOPE %	PARCEL ADDRESS
SAP 027-651-011														
113+63	RIGHT	933.19	933.25	3.00	7.50	933.47	6.00	1.50	933.56	17.71	-2.96	933.04		3965 SUNSET DRIVE
113+75	RIGHT	933.23	933.29	3.00	7.50	933.51	6.00	1.50	933.60	20.61	-5.01	932.57		
124+91	RIGHT	950.57	950.62	6.00	1.50	950.72	50.00	12.50	956.97	34.40	3.10	958.03		3829 SUNSET DRIVE
125+03	RIGHT	950.30	950.34	6.00	1.50	950.44	56.00	12.50	957.44	28.84	5.27	958.96		



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QUANTITY TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 20 / 336

UTILITY CONTACT INFORMATION

UTILITY COMPANY	UTILITIES	CONTACT NAME	CONTACT EMAIL	PHONE NUMBER	
				PHONE	CELL
ARVIG	FIBER OPTICS	BRIAN WOCHNICK	BRIAN.WOCHNICK@ARVIG.COM	218-298-4951	
CENTER POINT ENERGY MINNESOTA GAS - PROJECT ENGINEER	GAS	PAUL JACKS	PAUL.JACKS@CENTERPOINTENERGY.COM	612-321-5077	224-645-0474
CENTER POINT ENERGY MINNESOTA GAS - ADMINISTRATION ENGINEER	GAS	AUSTIN SOWERS	AUSTIN.SOWERS@CENTERPOINTENERGY.COM	612-321-5421	218-221-5271
CITY OF SPRING PARK/ORONO PUBLIC WORKS - SUPERINTENDENT	PUBLIC WORKS	D.J. GOMAN	DGOMAN@ORONOMN.GOV	952-249-4661	
CITY OF SPRING PARK/ORONO PUBLIC WORKS - PW UTILITY SUPERVISOR	WATER - SANITARY	SCOTT OBERAINGER	SOBERAINGER@ORONOMN.GOV	952-249-4680	
CITY OF SPRING PARK/ORONO PUBLIC WORKS - PW STREET/STORM SUPERVISOR	STORM	BRENT WELDON	BWELDON@ORONOMN.GOV	952-249-4670	
HENNEPIN COUNTY - TRAFFIC CONTROLS	TRAFFIC CONTROLS	BRANT KOUGH	BRANT.KOUGH@HENNEPIN.US	612-596-0339	612-235-1223
LUMEN - PREVIOUSLY CENTURYLINK REPRESENTED BY TERRA TECHNOLOGIES	COMMUNICATION	BRANDON AMAN	BAMAN@TERRATECHLLC.NET	701-866-7952	
MEDIACOM	FIBER/PHONE	THOMAS HEIMEL	THOMAS.HEIMEL@MEDIACOMCC.COM	845-545-8863	
MET COUNCIL	WATER - SANITARY	MANKING LEE	MANKING.LEE@METC.STATE.MN.US	651-602-4313	605-201-8740
XCEL ENERGY	LIGHTING	DAMON ERICKSON	DAMON.G.ERICKSON@XCELENERGY.COM	612-216-8359	
XCEL ENERGY	POWER	JEFF SCHEI	JEFF.V.SCHEI@XCELENERGY.COM	612-216-8192	612-494-0611
ZAYO - REPRESENTED BY TERRA TECHNOLOGIES	FIBER OPTICS	JASON OVERKAMP	JOVERKAMP@CONGRUEX.COM	651-788-5890	

GENERAL NOTES

- ALL UTILITY WORK SHOWN ON THESE SHEETS SHALL BE DONE BY OTHERS UNLESS NOTED.
- ALL RELOCATES AND ADJUSTMENTS SUBJECT TO HC RIGHT OF WAY.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE GOPHER STATE ONE CALL EXCAVATION NOTICE SYSTEM REQUIRED BY MINNESOTA STATUTE , CHAPTER 216D FOR ALL UNDERGROUND UTILITY LOCATIONS.
- THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".
- THE "LEAVE AS IS", "ADJUST", AND "RELOCATE" COLUMNS ARE BASED UPON THE BEST INFORMATION AVAILABLE AND MAY NOT REFLECT THE ACTUAL EFFECTS ON THE UTILITIES BY CONSTRUCTION. ACTUAL DETERMINATIONS WILL BE MADE IN THE FIELD DURING CONSTRUCTION.
- THE CONTRACTOR SHALL COORDINATE CONSTRUCTION OPERATIONS TO ALLOW FOR THE ADJUSTMENT OF THE UTILITIES AS INDICATED.
- SEE SPECIAL PROVISIONS FOR UTILITY CONTACT INFO

GOPHER STATE ONE CALL

651-454-0002
800-252-1166
WWW.GOPHERSTATEONECALL.ORG

Hennepin

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UTILITY TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 21 / 336

INPLACE STORM SEWER SUNSET DR (CSAH 51)

I

STRUCTURE NUMBER	ALIGNMENT	STATION TO STATION	OFFSET TO OFFSET (FT)	INPLACE TOP OF CASTING	FLOWLINE ELEV	FLOWS TO STRUCTURE	PIPE SIZE	PIPE LENGTH	LEAVE AS IS	REMOVE DRAINAGE STRUCTURE	REMOVE SEWER PIPE (STORM) (1)	PLUG FILL AND ABANDON PIPE SEWER	REMARKS
				LIN FT	LIN FT		INCH	LIN FT		EACH	LIN FT	LIN FT	
ICB 201	CSAH 51	99+61.7	33.0 RT	943.04	937.64	FLOWS SOUTH	18" RCP		X				
IMH 202	CSAH 51	100+19.0	25.4 RT	943.81	938.91	ICB 201	15" RCP	58		1			
ICB 206	CSAH 51	100+28.2	69.3 LT	945.33	940.43	ICB 203	15" RCP	72		1	72		
ICB 203	CSAH 51	100+44.9	0.9 RT	944.27	939.47	IMH 202	15" RCP	36		1	36		
ICB 205	CSAH 51	100+45.8	30.5 LT	944.65	940.65	ICB 203	15" RCP	32		1	32		
ICB 204	CSAH 51	100+76.9	34.1 RT	944.10	940.10	ICB 203	15" RCP	45		1	45		
IMH 224	CSAH 51	101+68.6	35.9 LT	948.62	943.62	ICB 205	15" RCP	129		1	16		8' AT IMH 224 AND 8' AT ICB 205
ICB 210	CSAH 51	101+79.3	105.7 LT	951.25	945.85	IMH 209		9	X				
IMH 209	CSAH 51	101+83.2	97.5 LT	951.32	NA				X				
IMH 207	CSAH 51	101+87.5	62.5 LT	950.69	940.89	IMH 224	15" RCP	34	X				
IMH 208	CSAH 51	101+94.0	63.2 LT	951.02	941.17				X				
ICB 211	CSAH 51	104+93.1	14.2 LT	948.13	943.03	ICB 212	12" RCP	44		1	44		
ICB 212	CSAH 51	105+14.2	24.2 RT	947.51	940.81	IMH 213	12" RCP	48		1	48		
IMH 213	CSAH 51	105+54.9	49.1 RT	944.50	940.05	FLOWS EAST	12" RCP			1			
IMH 225	CSAH 51	107+04.1	156.2 RT	937.36		IMH 226		48	X				
IMH 227	CSAH 51	107+72.0	142.3 RT	934.27		ICB 214		118	X				
ICB 214	CSAH 51	107+81.8	24.7 RT	936.05	930.35	ICB 215	18" RCP	93		1	93		
ICB 215	CSAH 51	108+75.2	23.3 RT	936.80	930.10	ICB 216	18" RCP	109		1	109		
ICB 216	CSAH 51	109+84.0	18.4 RT	936.82	929.32	FLOWS NW	18" RCP	197		1	35	163	
APR 234	CSAH 51	113+56.0	25.1 RT		930.74	APR 235	12" CMP	43			43		
APR 235	CSAH 51	113+94.9	36.9 RT	931.33	929.86	FLOWS EAST	12" CMP						
APR 238	CSAH 51	114+50.4	21.2 LT			ICB 217		50			50		
ICB 217	CSAH 51	114+99.6	23.0 LT	932.39	929.59	APR 233	18" RCP	63		1	63		
APR 233	CSAH 51	115+62.3	32.2 LT		927.73	FLOWS WEST	18" RCP						
ICB 218	CSAH 51	115+63.0	40.4 RT	932.60	928.40	APR 232	21" PVC	69	X		69		
APR 232	CSAH 51	115+64.5	28.6 LT		927.05	FLOWS WEST	18" CMP						
APR 239	CSAH 51	115+65.2	35.1 LT		927.01	FLOWS WEST	30" CMP		X				HALF-CUT PIPE
APR 228	CSAH 51	115+68.4	31.1 LT		926.87	FLOWS WEST	12" CMP						
ICB 219	CSAH 51	116+71.1	36.8 RT	931.80	928.60	ICB 218	21" RCP	107	X				
ICB 220	CSAH 51	116+78.4	15.8 LT	933.15	930.15	APR 228	12" CMP	112		1	112		
ICB 221	CSAH 51	117+88.7	52.2 RT	932.28	929.08	ICB 219	21" RCP	110	X				
ICB 222	CSAH 51	118+10.5	107.9 RT	932.34	929.14	ICB 221	21" RCP	59	X				
ICB 229	CSAH 51	133+40.4	130.5 RT	934.82	932.11	APR 236	24" CMP	81			81		PROTECT WOOD OUTLET STRUCTURE
ICB 223	CSAH 51	133+40.4	32.9 LT	933.82	929.07	FLOWS NORTH	24" CMP	62		1		62	
APR 237	CSAH 51	133+43.1	27.1 RT		932.71	ICB 223	24" CMP	60			60		
APR 236	CSAH 51	133+44.8	49.4 RT		931.15	APR 237	24" CMP						
APR 230	CSAH 51	135+88.2	41.1 LT		929.41	APR 231	24"RCP						
APR 231	CSAH 51	136+41.8	39.5 RT		934.17	APR 230	24"RCP	93			93		
							PROJECT TOTAL	**1981**		**15**	**1101**	**225**	

Hennepin

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.

AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER — 49073 LICENSE NO. — / / DATE

DESIGN BY: R. MANKE
CAD BY: R. MANKE
CHECKED BY: S. PARK
LAST REVISION: / /

UTILITY TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 22 / 336

LUMEN TECHNOLOGIES (PREVIOUSLY CENTURY LINK) INPLACE OVERHEAD LUMEN SUNSET DR (CSAH 51)							J
STRUCTURE TYPE	ALIGNMENT	STATION TO STATION	OFFSET TO OFFSET (FT)	ACTIONS			REMARKS
				ADJUST	RELOCATE	LEAVE AS IS	
OHF/O	CSAH 51	106+40.9 TO 107+51.1	32.5 RT TO 32.0 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	107+32.6 TO 106+40.6	31.1 RT TO 31.6 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	107+95.8 TO 106+40.9	29.4 RT TO 30.5 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	108+76.9 TO 109+52.0	31.4 RT TO 30.6 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	109+51.7 TO 108+77.3	29.3 RT TO 30.4 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	109+91.5 TO 108+77.3	27.1 RT TO 29.4 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	109+91.5 TO 111+95.4	27.1 RT TO 17.2 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	109+91.8 TO 109+52.0	29.3 RT TO 30.6 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	109+91.8 TO 109+91.5	29.3 RT TO 28.1 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	109+91.8 TO 110+61.7	29.3 RT TO 24.0 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	110+48.7 TO 111+44.0	23.7 RT TO 18.1 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	111+44.2 TO 109+91.5	19.1 RT TO 28.1 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	111+44.2 TO 110+50.7	17.0 RT TO 22.2 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	111+95.6 TO 111+95.4	18.2 RT TO 17.2 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	111+95.6 TO 112+55.1	18.2 RT TO 18.8 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	112+53.6 TO 112+54.6	86.9 LT TO 17.7 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	112+54.6 TO 113+83.6	17.7 RT TO 19.1 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	112+54.6 TO 112+25.8	17.7 RT TO 62.5 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	113+83.7 TO 114+86.7	20.2 RT TO 20.8 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	113+84.4 TO 113+83.6	21.9 LT TO 19.1 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	114+86.7 TO 116+13.8	19.8 RT TO 21.4 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	116+14.0 TO 116+87.7	22.5 RT TO 25.1 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	116+89.0 TO 117+40.6	25.1 RT TO 22.8 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	117+10.1 TO 117+40.5	23.6 RT TO 21.7 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	117+40.5 TO 117+95.0	21.7 RT TO 47.9 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	117+40.5 TO 118+63.1	21.7 RT TO 18.3 LT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	117+95.0 TO 117+99.3	47.9 RT TO 113.2 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	118+63.1 TO 120+91.5	18.3 LT TO 20.0 LT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	119+72.9 TO 119+90.2	29.6 RT TO 83.0 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	119+74.1 TO 119+72.9	19.1 LT TO 29.6 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	120+91.5 TO 120+93.3	20.0 LT TO 25.6 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	122+15.1 TO 123+34.1	21.6 LT TO 18.9 LT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	122+16.6 TO 122+25.7	40.9 RT TO 93.5 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	122+21.1 TO 122+16.6	17.0 LT TO 40.9 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	124+53.3 TO 125+79.3	14.9 LT TO 16.3 LT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	124+53.3 TO 124+68.9	14.9 LT TO 92.4 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	125+79.3 TO 125+98.8	16.3 LT TO 99.4 RT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	125+79.3 TO 128+24.0	16.3 LT TO 22.8 LT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	128+24.0 TO 127+33.7	22.8 LT TO 14.9 LT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	128+65.4 TO 129+49.2	65.6 RT TO 15.5 LT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	129+49.2 TO 128+71.6	15.5 LT TO 21.1 LT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	131+11.0 TO 131+11.0	15.6 LT TO 15.6 LT		X		OVERHEAD LINE TO BE BURIED
OHF/O	CSAH 51	135+29.7 TO 135+29.7	34.0 LT TO 34.0 LT		X		OVERHEAD LINE TO BE BURIED

Hennepin

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

DESIGN BY: R. MANKE
CAD BY: R. MANKE
CHECKED BY: S. PARK
LAST REVISION: / /

UTILITY TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 23 / 336

LUMEN TECHNOLOGIES (PREVIOUSLY CENTURY LINK) INPLACE OVERHEAD LUMEN SHADYWOOD RD (CSAH 19) — J

STRUCTURE TYPE	ALIGNMENT	STATION TO STATION	OFFSET TO OFFSET (FT)	ACTIONS			REMARKS
				ADJUST	RELOCATE	LEAVE AS IS	
OHF/O	CSAH 19	201+88.0 TO 202+13.3	146.1 RT TO 36.1 RT			X	
OHF/O	CSAH 19	202+13.3 TO 207+36.9	36.1 RT TO 30.2 RT			X	
OHF/O	CSAH 19	204+74.5 TO 207+36.9	32.7 RT TO 30.2 RT			X	
OHF/O	CSAH 19	204+75.0 TO 207+35.4	31.2 RT TO 29.3 RT			X	
OHF/O	CSAH 19	207+35.4 TO 208+46.6	29.3 RT TO 42.4 RT			X	
OHF/O	CSAH 19	207+36.9 TO 208+46.4	30.2 RT TO 43.7 RT			X	
OHF/O	CSAH 19	208+46.4 TO 210+65.4	43.7 RT TO 40.8 RT			X	
OHF/O	CSAH 19	208+46.6 TO 209+63.0	42.4 RT TO 37.1 RT			X	

LUMEN TECHNOLOGIES (PREVIOUSLY CENTURY LINK) INPLACE BURIED LUMEN SUNSET DR (CSAH 51) — K

STRUCTURE TYPE	ALIGNMENT	STATION TO STATION	OFFSET TO OFFSET	T/C ELEV.	ACTIONS			REMARKS
					ADJUST	RELOCATE	LEAVE AS IS	
BUR_COMM COPPER	CSAH 51	100+33.9 TO 100+35.2	141.9 LT TO 89.5 LT				X	
BUR_COMM COPPER	CSAH 51	100+35.2 TO 100+43.8	89.5 LT TO 42.1 LT				X	
BUR_COMM COPPER	CSAH 51	100+36.0 TO 100+36.9	90.0 LT TO 144.4 LT				X	
BUR_COMM COPPER	CSAH 51	100+36.0 TO 100+44.8	90.0 LT TO 41.9 RT				X	
BUR_COMM COPPER	CSAH 51	100+40.8 TO 100+43.8	237.2 RT TO 42.1 RT				X	
BUR_COMM COPPER	CSAH 51	100+44.2 TO 100+47.7	247.2 RT TO 42.0 RT				X	
BUR_COMM COPPER	CSAH 51	100+44.2 TO 101+60.2	41.9 RT TO 38.5 RT				X	
BUR_COMM COPPER	CSAH 51	101+53.9 TO 101+60.2	41.2 LT TO 38.5 RT				X	
BUR_COMM COPPER	CSAH 51	101+60.2 TO 103+21.2	38.5 RT TO 39.4 RT				X	
BUR_COMM COPPER	CSAH 51	103+21.2 TO 104+32.4	39.4 RT TO 35.6 RT				X	
BUR_COMM COPPER	CSAH 51	103+22.5 TO 104+32.2	43.7 RT TO 38.1 RT				X	
BUR_COMM COPPER	CSAH 51	104+32.4 TO 106+40.6	35.6 RT TO 31.6 RT				X	
BUR_COMM COPPER	CSAH 51	104+32.2 TO 106+40.9	38.1 RT TO 32.5 RT				X	

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER — 49073 LICENSE NO. — / / DATE

DESIGN BY: R. MANKE
CAD BY: R. MANKE
CHECKED BY: S. PARK
LAST REVISION: / /

UTILITY TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 24 / 336

MEDIACOM INPLACE BURIED F/O SUNSET DR (CSAH 51)							L
STRUCTURE TYPE	ALIGNMENT	STATION TO STATION	OFFSET TO OFFSET (FT)	ACTIONS			REMARKS
				ADJUST	RELOCATE	LEAVE AS IS	
BUR_COMM F/O	CSAH 51	100+29.4 TO 100+39.7	206.9 LT TO 44.6 RT			X	
BUR_COMM F/O	CSAH 51	100+39.7 TO 102+14.3	44.6 RT TO 42.4 RT			X	
BUR_COMM F/O	CSAH 51	101+88.0 TO 101+96.7	96.1 LT TO 36.6 LT			X	
BUR_COMM F/O	CSAH 51	101+96.7 TO 102+87.2	36.6 LT TO 23.3 LT			X	
BUR_COMM F/O	CSAH 51	102+14.3 TO 104+38.5	42.4 RT TO 37.5 RT			X	
BUR_COMM F/O	CSAH 51	102+86.4 TO 102+87.2	29.6 LT TO 23.3 LT			X	
BUR_COMM F/O	CSAH 51	102+86.4 TO 103+07.5	29.6 LT TO 25.9 LT			X	
BUR_COMM F/O	CSAH 51	102+87.0 TO 105+13.0	159.3 LT TO 124.8 RT			X	
BUR_COMM F/O	CSAH 51	102+89.2 TO 105+15.4	160.3 LT TO 122.8 RT			X	
BUR_COMM F/O	CSAH 51	102+91.1 TO 105+19.3	162.3 LT TO 120.8 RT			X	
BUR_COMM F/O	CSAH 51	103+07.5 TO 103+14.0	25.9 LT TO 8.7 LT			X	
BUR_COMM F/O	CSAH 51	103+14.0 TO 103+23.2	8.7 LT TO 15.2 LT			X	
BUR_COMM F/O	CSAH 51	103+23.2 TO 103+28.0	15.2 LT TO 8.6 LT			X	
BUR_COMM F/O	CSAH 51	103+28.0 TO 105+10.6	8.6 LT TO 15.8 LT			X	
BUR_COMM F/O	CSAH 51	103+61.7 TO 104+40.3	144.3 LT TO 53.4 LT			X	
BUR_COMM F/O	CSAH 51	103+64.9 TO 103+92.6	9.5 RT TO 7.4 RT			X	
BUR_COMM F/O	CSAH 51	103+92.6 TO 103+98.5	7.3 RT TO 1.7 LT			X	
BUR_COMM F/O	CSAH 51	103+98.5 TO 104+11.0	1.7 LT TO 2.6 LT			X	
BUR_COMM F/O	CSAH 51	104+11.0 TO 104+19.1	2.6 LT TO 4.8 RT			X	
BUR_COMM F/O	CSAH 51	104+19.1 TO 104+61.0	4.8 RT TO 4.9 RT			X	
BUR_COMM F/O	CSAH 51	104+38.5 TO 103+79.4	37.5 RT TO 45.2 RT			X	
BUR_COMM F/O	CSAH 51	104+40.4 TO 105+09.3	53.4 LT TO 59.8 LT			X	
BUR_COMM F/O	CSAH 51	104+50.7 TO 104+99.8	87.5 LT TO 23.6 LT			X	
BUR_COMM F/O	CSAH 51	104+61.0 TO 104+61.1	4.9 RT TO 5.2 LT			X	
BUR_COMM F/O	CSAH 51	104+61.1 TO 104+71.1	5.2 LT TO 5.1 LT			X	
BUR_COMM F/O	CSAH 51	104+71.1 TO 104+81.5	5.1 LT TO 6.7 RT			X	
BUR_COMM F/O	CSAH 51	104+81.5 TO 105+56.0	6.7 RT TO 4.5 RT		X		PROPOSED STORM MAIN CLASH
BUR_COMM F/O	CSAH 51	104+85.1 TO 105+07.2	37.6 LT TO 10.4 LT			X	
BUR_COMM F/O	CSAH 51	105+07.2 TO 105+55.6	10.4 LT TO 9.7 LT	X			VERTICAL ADJUSTMENT
BUR_COMM F/O	CSAH 51	105+10.6 TO 105+09.3	15.8 LT TO 59.7 LT			X	
BUR_COMM F/O	CSAH 51	105+55.6 TO 105+07.0	9.7 LT TO 10.7 LT			X	
BUR_COMM F/O	CSAH 51	105+71.6 TO 105+56.0	3.2 RT TO 4.5 RT			X	
BUR_COMM F/O	CSAH 51	106+38.8 TO 105+40.9	15.6 LT TO 51.6 LT			X	
BUR_COMM F/O	CSAH 51	106+40.9 TO 106+38.8	30.5 RT TO 15.6 LT			X	
BUR_COMM F/O	CSAH 51	106+40.9 TO 104+99.8	30.5 RT TO 23.6 LT			X	
BUR_COMM F/O	CSAH 51	106+44.3 TO 106+97.4	46.0 RT TO 51.1 RT			X	
BUR_COMM F/O	CSAH 51	106+97.4 TO 107+24.1	51.1 RT TO 113.7 RT			X	
BUR_COMM F/O	CSAH 51	111+21.9 TO 112+07.6	6.2 LT TO 5.7 LT	X			VERTICAL ADJUSTMENT
BUR_COMM F/O	CSAH 51	112+07.6 TO 112+09.3	5.7 LT TO 20.4 LT			X	

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER — 49073 LICENSE NO. — / / DATE

DESIGN BY: R. MANKE
CAD BY: R. MANKE
CHECKED BY: S. PARK
LAST REVISION: / /

UTILITY TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 25 / 336

MEDIACOM INPLACE BURIED F/O SUNSET DR (CSAH 51)

L

STRUCTURE TYPE	ALIGNMENT	STATION TO STATION	OFFSET TO OFFSET (FT)	ACTIONS			REMARKS
				ADJUST	RELOCATE	LEAVE AS IS	
BUR_COMM F/O	CSAH 51	112+08.4 TO 112+01.4	108.2 RT TO 150.8 RT			X	
BUR_COMM F/O	CSAH 51	112+08.4 TO 112+37.4	108.2 RT TO 16.5 LT			X	
BUR_COMM F/O	CSAH 51	112+09.3 TO 112+37.3	20.4 LT TO 16.5 LT			X	
BUR_COMM F/O	CSAH 51	112+35.8 TO 113+76.4	4.2 LT TO 0.6 RT	X			VERTICAL ADJUSTMENT
BUR_COMM F/O	CSAH 51	112+81.6 TO 112+81.9	24.9 RT TO 27.3 LT			X	
BUR_COMM F/O	CSAH 51	112+95.6 TO 112+95.9	24.6 RT TO 30.6 LT			X	
BUR_COMM F/O	CSAH 51	112+97.8 TO 113+57.6	43.3 LT TO 46.4 LT			X	
BUR_COMM F/O	CSAH 51	113+23.3 TO 113+23.1	9.2 RT TO 26.5 LT			X	
BUR_COMM F/O	CSAH 51	113+23.1 TO 113+65.66	26.5 LT TO 21.2 LT			X	
BUR_COMM F/O	CSAH 51	113+26.5 TO 113+51.6	12.5 LT TO 10.9 LT			X	
BUR_COMM F/O	CSAH 51	113+51.6 TO 113+66.7	10.9 LT TO 21.2 LT			X	
BUR_COMM F/O	CSAH 51	113+50.2 TO 113+49.6	23.2 LT TO 49.6 LT			X	
BUR_COMM F/O	CSAH 51	113+57.6 TO 113+82.7	46.4 LT TO 23.2 LT			X	
BUR_COMM F/O	CSAH 51	113+72.5 TO 117+85.9	25.8 LT TO 27.5 LT			X	
BUR_COMM F/O	CSAH 51	113+75.4 TO 113+76.4	21.9 LT TO 11.6 LT			X	
BUR_COMM F/O	CSAH 51	113+76.4 TO 113+72.4	11.6 LT TO 11.4 LT			X	
BUR_COMM F/O	CSAH 51	113+72.4 TO 113+72.2	11.4 LT TO 7.0 LT			X	
BUR_COMM F/O	CSAH 51	113+72.2 TO 113+76.5	7.0 LT TO 7.2 LT			X	
BUR_COMM F/O	CSAH 51	113+76.5 TO 113+74.3	7.2 LT TO 30.2 RT			X	
BUR_COMM F/O	CSAH 51	113+74.3 TO 113+69.6	30.2 RT TO 29.5 RT			X	
BUR_COMM F/O	CSAH 51	113+69.6 TO 113+68.6	29.5 RT TO 36.4 RT			X	
BUR_COMM F/O	CSAH 51	113+68.6 TO 113+85.6	36.4 RT TO 36.6 RT			X	
BUR_COMM F/O	CSAH 51	113+78.3 TO 113+79.8	27.5 RT TO 4.3 LT			X	
BUR_COMM F/O	CSAH 51	113+79.8 TO 113+82.9	4.3 LT TO 4.5 LT			X	
BUR_COMM F/O	CSAH 51	113+82.9 TO 113+82.6	4.5 LT TO 10.1 LT			X	
BUR_COMM F/O	CSAH 51	113+82.6 TO 113+80.1	10.1 LT TO 9.9 LT			X	
BUR_COMM F/O	CSAH 51	113+80.1 TO 113+79.3	9.9 LT TO 24 LT			X	
BUR_COMM F/O	CSAH 51	113+84.5 TO 114+71.0	21.9 LT TO 42.6 LT			X	
BUR_COMM F/O	CSAH 51	113+84.1 TO 116+53.4	2.6 RT TO 7.8 RT			X	
BUR_COMM F/O	CSAH 51	116+53.4 TO 116+57.6	7.8 RT TO 5.7 LT			X	
BUR_COMM F/O	CSAH 51	116+57.6 TO 116+82.2	5.7 LT TO 3.9 LT			X	
BUR_COMM F/O	CSAH 51	116+82.2 TO 118+17.5	3.9 LT TO 15.1 RT			X	
BUR_COMM F/O	CSAH 51	116+82.3 TO 116+82.8	7.0 LT TO 12.3 LT			X	
BUR_COMM F/O	CSAH 51	116+82.8 TO 118+33.5	12.3 LT TO 5.0 RT			X	
BUR_COMM F/O	CSAH 51	117+57.6 TO 126+59.3	43.7 LT TO 46.4 LT			X	
BUR_COMM F/O	CSAH 51	117+83.6 TO 118+39.7	27.5 LT TO 2.5 LT			X	
BUR_COMM F/O	CSAH 51	118+17.5 TO 118+13.5	15.1 RT TO 140.5 RT			X	
BUR_COMM F/O	CSAH 51	118+33.5 TO 118+32.4	5.0 RT TO 174.2 RT			X	

Hennepin

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER — 49073 LICENSE NO. — / / DATE

DESIGN BY: R. MANKE
CAD BY: R. MANKE
CHECKED BY: S. PARK
LAST REVISION: / /

UTILITY TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 26 / 336

MEDIACOM INPLACE BURIED F/O SUNSET DR (CSAH 51) — L

STRUCTURE TYPE	ALIGNMENT	STATION TO STATION	OFFSET TO OFFSET (FT)	ACTIONS			REMARKS
				ADJUST	RELOCATE	LEAVE AS IS	
BUR_COMM F/O	CSAH 51	118+06.0 TO 118+30.6	4.7 RT TO 34.4 LT			X	
BUR_COMM F/O	CSAH 51	118+39.7 TO 118+81.1	2.5 LT TO 3.4 LT			X	
BUR_COMM F/O	CSAH 51	118+81.1 TO 118+74.6	3.4 LT TO 57.5 LT			X	
BUR_COMM F/O	CSAH 51	118+94.9 TO 119+95.4	36.0 LT TO 3.1 LT			X	
BUR_COMM F/O	CSAH 51	119+95.4 TO 125+21.2	3.1 LT TO 3.8 LT	X			VERTICAL ADJUSTMENT
BUR_COMM F/O	CSAH 51	118+06.0 TO 118+30.6	4.7 RT TO 34.4 LT			X	
BUR_COMM F/O	CSAH 51	125+07.8 TO 127+45.7	60.7 RT TO 63.4 RT			X	
BUR_COMM F/O	CSAH 51	125+68.7 TO 127+13.3	18.7 RT TO 21.9 RT			X	
BUR_COMM F/O	CSAH 51	126+59.3 TO 127+30.1	46.4 LT TO 28.6 LT			X	
BUR_COMM F/O	CSAH 51	127+13.3 TO 127+24.8	21.9 RT TO 53.1 RT			X	
BUR_COMM F/O	CSAH 51	127+24.8 TO 127+64.1	53.1 RT TO 42.4 RT			X	
BUR_COMM F/O	CSAH 51	127+30.1 TO 131+50.5	28.6 LT TO 52.6 LT		X		PROPOSED SANITARY MAIN - CATCH BASINS - JELLYFISH
BUR_COMM F/O	CSAH 51	127+30.1 TO 137+85.3	28.6 LT TO 134.4 LT			X	
BUR_COMM F/O	CSAH 51	127+64.1 TO 127+64.0	42.4 RT TO 20.4 RT			X	
BUR_COMM F/O	CSAH 51	127+64.4 TO 131+11.6	20.4 RT TO 30.2 RT			X	
BUR_COMM F/O	CSAH 51	131+11.6 TO 131+71.2	30.2 RT TO 25.9 RT			X	
BUR_COMM F/O	CSAH 51	131+50.5 TO 134+54.2	52.6 LT TO 28.3 LT			X	
BUR_COMM F/O	CSAH 51	131+71.2 TO 132+30.2	25.9 RT TO 18.3 RT			X	
BUR_COMM F/O	CSAH 51	132+30.2 TO 134+45.8	18.3 RT TO 25.4 RT	X			VERTICAL ADJUSTMENT
BUR_COMM F/O	CSAH 51	134+45.8 TO 135+26.7	25.4 RT TO 22.1 RT			X	
BUR_COMM F/O	CSAH 51	134+54.2 TO 136+36.2	28.3 LT TO 38.4 LT			X	
BUR_COMM F/O	CSAH 51	135+26.7 TO 136+46.9	22.1 RT TO 17.1 RT	X			VERTICAL ADJUSTMENT
BUR_COMM F/O	CSAH 51	136+46.9 TO 135+19.7	17.1 RT TO 35.1 LT		X		PROPOSED RETAINING WALL
BUR_COMM F/O	CSAH 51	137+67.4 TO 137+44.0	61.4 LT TO 2.5 LT		X		PROPOSED SANITARY MAIN
BUR_COMM F/O	CSAH 51	137+44.0 TO 138+13.7	2.5 LT TO 4.8 LT			X	

MEDIACOM INPLACE BURIED F/O SHADYWOOD RD (CSAH 19) — L

STRUCTURE TYPE	ALIGNMENT	STATION TO STATION	OFFSET TO OFFSET (FT)	ACTIONS			REMARKS
				ADJUST	RELOCATE	LEAVE AS IS	
BUR_COMM F/O	CSAH 19	201+87.3 TO 203+27.1	7.6 RT TO 12.0 RT			X	
BUR_COMM F/O	CSAH 19	202+13.9 TO 203+82.1	43.8 RT TO 40.0 RT			X	
BUR_COMM F/O	CSAH 19	203+21.1 TO 204+62.6	12.0 RT TO 10.0 RT			X	
BUR_COMM F/O	CSAH 19	203+82.1 TO 209+35.9	40.0 RT TO 45.9 RT			X	
BUR_COMM F/O	CSAH 19	203+82.2 TO 209+35.9	43.1 RT TO 48.9 RT			X	
BUR_COMM F/O	CSAH 19	204+12.2 TO 205+89.8	35.9 LT TO 46.3 LT			X	
BUR_COMM F/O	CSAH 19	204+42.1 TO 210+18.3	27.9 LT TO 52.1 LT			X	
BUR_COMM F/O	CSAH 19	204+62.6 TO 209+32.2	10.1 RT TO 5.6 RT			X	
BUR_COMM F/O	CSAH 19	206+90.9 TO 210+14.7	51.9 LT TO 61.1 LT			X	

Hennepin

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER — 49073 LICENSE NO. — / / DATE

DESIGN BY: R. MANKE
CAD BY: R. MANKE
CHECKED BY: S. PARK
LAST REVISION: / /

UTILITY TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 27 / 336

XCEL ENERGY (OH) INPLACE UTILITIES SUNSET DR (CSAH 51) — M

INPLACE POWER	ALIGNMENT	STATION TO STATION	OFFSET TO OFFSET (FT)	ACTIONS			REMARKS
				ADJUST	RELOCATE	LEAVE AS IS	
IPP	CSAH 51	105+19.5	43.2 RT		X		POWER POLE TO BE REMOVED
XCEL (OH)	CSAH 51	105+20.6 TO 106+38.3	43.2 RT TO 31.6 RT		X		OVERHEAD LINE TO BE BURIED
IPP	CSAH 51	105+31.9	41.8 RT		X		POWER POLE TO BE REMOVED
IPP	CSAH 51	105+63.6	39.9 LT		X		POWER POLE TO BE REMOVED
IPP	CSAH 51	106+38.3	32.6 RT		X		POWER POLE TO BE REMOVED
XCEL (OH)	CSAH 51	106+38.6 TO 106+41.0	14.2 LT TO 30.3 RT		X		OVERHEAD LINE TO BE BURIED
IPP	CSAH 51	106+38.6	15.2 LT		X		POWER POLE TO BE REMOVED
XCEL (OH)	CSAH 51	106+41.0 TO 105+24.3	30.3 RT TO 43.2 RT		X		OVERHEAD LINE TO BE BURIED
XCEL (OH)	CSAH 51	107+75.4 TO 108+76.2	29.0 RT TO 28.5 RT		X		OVERHEAD LINE TO BE BURIED
IPP	CSAH 51	107+75.6	30.3 RT		X		POWER POLE TO BE REMOVED
XCEL (OH)	CSAH 51	107+99.0 TO 109+91.6	31.6 LT TO 26.4 RT		X		OVERHEAD LINE TO BE BURIED
IPP	CSAH 51	107+99.8	32.3 LT		X		POWER POLE TO BE REMOVED
IPP	CSAH 51	108+76.2	29.8 RT		X		POWER POLE TO BE REMOVED
XCEL (OH)	CSAH 51	108+76.3 TO 108+76.3	28.5 RT TO 28.5 RT		X		OVERHEAD LINE TO BE BURIED
XCEL (OH)	CSAH 51	109+50.7 TO 109+73.9	26.8 RT TO 26.5 RT		X		OVERHEAD LINE TO BE BURIED
IPP	CSAH 51	109+91.5	28.1 RT		X		POWER POLE TO BE REMOVED
XCEL (OH)	CSAH 51	109+91.6 TO 107+75.7	26.4 RT TO 29.3 RT		X		OVERHEAD LINE TO BE BURIED
XCEL (OH)	CSAH 51	110+50.3 TO 110+50.3	21.0 RT TO 21.0 RT		X		OVERHEAD LINE TO BE BURIED
IPP	CSAH 51	111+07.0	27.0 LT		X		POWER POLE TO BE REMOVED
XCEL (OH)	CSAH 51	111+43.3 TO 111+07.8	17.2 RT TO 26.2 LT		X		OVERHEAD LINE TO BE BURIED
XCEL (OH)	CSAH 51	111+43.8 TO 111+95.5	17.0 RT TO 15.8 RT		X		OVERHEAD LINE TO BE BURIED
IPP	CSAH 51	111+44.0	18.0 RT		X		POWER POLE TO BE REMOVED
XCEL (OH)	CSAH 51	111+44.8 TO 111+68.8	17.3 RT TO 24.7 LT		X		OVERHEAD LINE TO BE BURIED
IPP	CSAH 51	111+69.6	25.4 LT		X		POWER POLE TO BE REMOVED
XCEL (OH)	CSAH 51	111+95.5 TO 112+55.5	15.8 RT TO 16.5 RT		X		OVERHEAD LINE TO BE BURIED
IPP	CSAH 51	112+53.3	86.5 LT		X		POWER POLE TO BE REMOVED
XCEL (OH)	CSAH 51	112+53.8 TO 112+56.1	85.6 LT TO 17.7 RT		X		OVERHEAD LINE TO BE BURIED
IPP	CSAH 51	112+55.1	18.1 RT		X		POWER POLE TO BE REMOVED
XCEL (OH)	CSAH 51	112+55.5 TO 113+83.4	16.5 RT TO 17.8 RT		X		OVERHEAD LINE TO BE BURIED
XCEL (OH)	CSAH 51	112+56.1 TO 112+24.6	17.7 RT TO 71.1 RT		X		OVERHEAD LINE TO BE BURIED
IPP	CSAH 51	113+83.4	19.6 RT		X		POWER POLE TO BE REMOVED
XCEL (OH)	CSAH 51	113+84.0 TO 114+87.5	20.1 LT TO 19.6 RT		X		OVERHEAD LINE TO BE BURIED
IPP	CSAH 51	113+84.3	21.1 LT		X		POWER POLE TO BE REMOVED
IPP	CSAH 51	114+86.6	20.2 RT		X		POWER POLE TO BE REMOVED
XCEL (OH)	CSAH 51	114+86.9 TO 114+87.5	18.7 RT TO 18.7 RT		X		OVERHEAD LINE TO BE BURIED
XCEL (OH)	CSAH 51	115+66.0 TO 116+12.8	18.9 LT TO 21.6 RT		X		OVERHEAD LINE TO BE BURIED
IPP	CSAH 51	115+66.9	19.4 LT		X		POWER POLE TO BE REMOVED
XCEL (OH)	CSAH 51	115+67.5 TO 116+13.9	18.5 LT TO 20.2 RT		X		OVERHEAD LINE TO BE BURIED
IPP	CSAH 51	116+13.8	21.8 RT		X		POWER POLE TO BE REMOVED
XCEL (OH)	CSAH 51	116+13.9 TO 113+83.7	20.2 RT TO 18.5 RT		X		OVERHEAD LINE TO BE BURIED

1 INPLACE POWER POLES BEING RELOCATED DUE TO PROPOSED TRAIL LOCATION.
2 INPLACE POWER POLES BEING RELOCATED THUS POWERLINES NEED TO BE RELOCATED.
3 FIELD VERIFY IF RELOCATION IS REQUIRED.
4 INPLACE POWER POLES BEING RELOCATED DUE TO PROPOSED SIDEWALK LOCATION.
5 CONFLICT WITH PROPOSED STORM PIPE CROSSING INTO POWER LINE.

Hennepin

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER — 49073 LICENSE NO. — / / DATE

DESIGN BY: R. MANKE
CAD BY: R. MANKE
CHECKED BY: S. PARK
LAST REVISION: / /

UTILITY TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 28 / 336

XCEL ENERGY (OH) INPLACE UTILITIES SUNSET DR (CSAH 51) — M

INPLACE POWER	ALIGNMENT	STATION TO STATION	OFFSET TO OFFSET (FT)	ACTIONS			REMARKS
				ADJUST	RELOCATE	LEAVE AS IS	
IPP	CSAH 51	117+40.5 TO 117+41.1	20.9 RT TO 20.8 RT		X		POWER POLE TO BE REMOVED
IPP	CSAH 51	117+40.5	21.8 RT		X		POWER POLE TO BE REMOVED
XCEL (OH)	CSAH 51	117+77.7 TO 122+14.9	19.3 LT TO 22.7 LT		X		OVERHEAD LINE TO BE BURIED
IPP	CSAH 51	117+78.4	20.1 LT		X		POWER POLE TO BE REMOVED
IPP	CSAH 51	117+94.2	47.7 RT		X		POWER POLE TO BE REMOVED
XCEL (OH)	CSAH 51	117+96.3 TO 117+96.3	46.9 RT TO 46.9 RT		X		OVERHEAD LINE TO BE BURIED
XCEL (OH)	CSAH 51	118+02.1 TO 117+40.5	112.7 RT TO 20.9 RT		X		OVERHEAD LINE TO BE BURIED
XCEL (OH)	CSAH 51	118+62.7 TO 117+40.6	19.2 LT TO 20.8 RT		X		OVERHEAD LINE TO BE BURIED
XCEL (OH)	CSAH 51	118+62.7 TO 119+73.1	19.2 LT TO 19.1 LT		X		OVERHEAD LINE TO BE BURIED
IPP	CSAH 51	118+62.8	18.8 LT		X		POWER POLE TO BE REMOVED
XCEL (OH)	CSAH 51	119+72.8 TO 122+15.1	28.6 RT TO 21.1 LT		X		OVERHEAD LINE TO BE BURIED
IPP	CSAH 51	119+72.9	29.6 RT		X		POWER POLE TO BE REMOVED
IPP	CSAH 51	119+73.1	20.2 LT		X		POWER POLE TO BE REMOVED
XCEL (OH)	CSAH 51	120+91.6 TO 119+73.2	21.4 LT TO 20.7 LT		X		OVERHEAD LINE TO BE BURIED
IPP	CSAH 51	120+91.7	20.6 LT		X		POWER POLE TO BE REMOVED
IPP	CSAH 51	122+15.1	22.1 LT		X		POWER POLE TO BE REMOVED
XCEL (OH)	CSAH 51	122+15.3 TO 122+14.9	39.4 RT TO 22.7 LT		X		OVERHEAD LINE TO BE BURIED
IPP	CSAH 51	122+15.4	40.4 RT		X		POWER POLE TO BE REMOVED
IPP	CSAH 51	122+26.1	95.8 RT		X		POWER POLE TO BE REMOVED
XCEL (OH)	CSAH 51	122+57.9 TO 124+53.4	22.2 LT TO 16.6 LT		X		OVERHEAD LINE TO BE BURIED
IPP	CSAH 51	123+34.1	19.4 LT		X		POWER POLE TO BE REMOVED
IPP	CSAH 51	124+53.2	15.5 LT		X		POWER POLE TO BE REMOVED
XCEL (OH)	CSAH 51	124+53.4 TO 125+79.3	16.6 LT TO 17.4 LT		X		OVERHEAD LINE TO BE BURIED
IPP	CSAH 51	125+38.7	23.0 RT		X		POWER POLE TO BE REMOVED
XCEL (OH)	CSAH 51	125+78.6 TO 125+39.4	15.5 LT TO 22.2 RT		X		OVERHEAD LINE TO BE BURIED
XCEL (OH)	CSAH 51	125+79.3 TO 127+04.1	17.4 LT TO 15.6 LT		X		OVERHEAD LINE TO BE BURIED
IPP	CSAH 51	125+79.3	16.3 LT		X		POWER POLE TO BE REMOVED
XCEL (OH)	CSAH 51	127+04.1 TO 127+33.5	15.6 LT TO 16.1 LT		X		OVERHEAD LINE TO BE BURIED
XCEL (OH)	CSAH 51	127+33.5 TO 129+49.4	16.1 LT TO 15.1 LT		X		OVERHEAD LINE TO BE BURIED
IPP	CSAH 51	127+33.6	15.4 LT		X		POWER POLE TO BE REMOVED
XCEL (OH)	CSAH 51	127+34.1 TO 127+79.4	16.4 LT TO 65.9 LT		X		OVERHEAD LINE TO BE BURIED
IPP	CSAH 51	127+80.6	66.2 LT		X		POWER POLE TO BE REMOVED
IPP	CSAH 51	128+24.0	23.3 LT		X		POWER POLE TO BE REMOVED
IPP	CSAH 51	128+71.4	21.5 LT		X		POWER POLE TO BE REMOVED
XCEL (OH)	CSAH 51	128+71.5 TO 128+15.6	22.0 LT TO 24.1 LT		X		OVERHEAD LINE TO BE BURIED
IPP	CSAH 51	129+49.3	16.2 LT		X		POWER POLE TO BE REMOVED
XCEL (OH)	CSAH 51	129+49.5 TO 129+49.4	16.7 LT TO 16.7 LT		X		OVERHEAD LINE TO BE BURIED
XCEL (OH)	CSAH 51	129+49.5 TO 131+10.9	16.7 LT TO 16.7 LT		X		OVERHEAD LINE TO BE BURIED
XCEL (OH)	CSAH 51	129+85.0 TO 131+10.9	43.2 RT TO 16.7 LT		X		OVERHEAD LINE TO BE BURIED

NOTES:

1 INPLACE POWER POLES BEING RELOCATED DUE TO PROPOSED TRAIL LOCATION.
2 INPLACE POWER POLES BEING RELOCATED THUS POWERLINES NEED TO BE RELOCATED.
3 FIELD VERIFY IF RELOCATION IS REQUIRED.
4 INPLACE POWER POLES BEING RELOCATED DUE TO PROPOSED SIDEWALK LOCATION.
5 CONFLICT WITH PROPOSED STORM PIPE CROSSING INTO POWER LINE.

Hennepin

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER — 49073 LICENSE NO. — / / DATE

DESIGN BY: R. MANKE
CAD BY: R. MANKE
CHECKED BY: S. PARK
LAST REVISION: / /

UTILITY TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 29 / 336

XCEL ENERGY (OH) INPLACE UTILITIES SHADYWOOD RD (CSAH 19) — M

INPLACE POWER	ALIGNMENT	STATION TO STATION	OFFSET TO OFFSET (FT)	ACTIONS			REMARKS
				ADJUST	RELOCATE	LEAVE AS IS	
IPP	CSAH 19	202+61.4	30.3 RT			X	
XCEL (OH)	CSAH 19	202+62.1 TO 202+24.7	29.3 RT TO 33.3 RT			X	
IPP	CSAH 19	203+04.1	36.3 RT			X	
IPP	CSAH 19	203+04.1	30.8 RT			X	
IPP	CSAH 19	203+73.3	13.1 LT			X	
IPP	CSAH 19	203+79.6	29.5 RT			X	
XCEL (OH)	CSAH 19	203+80.1 TO 202+62.1	28.5 RT TO 29.3 RT			X	
IPP	CSAH 19	204+06.7	35.9 LT			X	
IPP	CSAH 19	204+75.0	31.2 RT			X	
XCEL (OH)	CSAH 19	204+75.2 TO 203+80.1	30.2 RT TO 28.5 RT			X	
IPP	CSAH 19	206+13.9	27.6 RT			X	
IPP	CSAH 19	207+37.2	28.6 RT			X	
XCEL (OH)	CSAH 19	207+37.9 TO 208+46.8	28.6 RT TO 40.0 RT			X	
XCEL (OH)	CSAH 19	207+37.9 TO 206+14.1	28.6 RT TO 25.9 RT			X	
IPP	CSAH 19	208+46.6	41.6 RT			X	
IPP	CSAH 19	209+63.3	36.1 RT			X	
XCEL (OH)	CSAH 19	209+63.4 TO 208+46.8	35.1 RT TO 40.0 RT			X	
IPP	CSAH 19	210+85.9	40.4 RT			X	

NOTES:
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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER — 49073 LICENSE NO. — / / DATE

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LAST REVISION: / /

UTILITY TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 30 / 336

XCEL ENERGY (BUR) INPLACE UTILITIES SUNSET DR (CSAH 51)							N
INPLACE POWER	ALIGNMENT	STATION TO STATION	OFFSET TO OFFSET (FT)	ACTIONS			REMARKS
				ADJUST	RELOCATE	LEAVE AS IS	
XCEL (BUR)	CSAH 51	99+00.0 TO 100+31.9	98.5 RT TO 95.9 RT			X	
XCEL (BUR)	CSAH 51	100+27.8 TO 102+11.3	280.1 RT TO 265.1 RT			X	
XCEL (BUR)	CSAH 51	100+31.9 TO 100+34.7	95.9 RT TO 49.0 RT			X	
XCEL (BUR)	CSAH 51	100+34.7 TO 102+12.3	49.0 RT TO 41.6 LT			X	
XCEL (BUR)	CSAH 51	101+53.7 TO 102+11.3	42.2 LT TO 265.1 RT			X	
XCEL (BUR)	CSAH 51	101+53.7 TO 102+54.8	42.2 LT TO 35.2 LT			X	
XCEL (BUR)	CSAH 51	102+12.3 TO 103+66.1	41.6 RT TO 42.4 RT			X	
POWER BOX	CSAH 51	102+52.6	34.6 LT			X	
XCEL (BUR)	CSAH 51	102+54.8 TO 103+32.9	35.2 LT TO 22.4 LT			X	
XCEL (BUR)	CSAH 51	103+32.9 TO 103+52.5	22.4 LT TO 63.9 LT			X	
XCEL (BUR)	CSAH 51	103+48.1 TO 103+53.6	53.3 LT TO 53.8 LT			X	
XCEL (BUR)	CSAH 51	103+52.5 TO 103+64.9	63.9 LT TO 65.5 LT			X	
XCEL (BUR)	CSAH 51	103+53.6 TO 103+66.1	53.8 LT TO 42.4 RT			X	
POWER BOX	CSAH 51	103+53.6	53.8 LT			X	
POWER BOX	CSAH 51	103+66.2	56.4 LT			X	
XCEL (BUR)	CSAH 51	103+72.0 TO 105+40.8	64.2 LT TO 144.4 RT			X	
XCEL (BUR)	CSAH 51	103+72.4 TO 103+72.4	99.2 LT TO 72.7 LT			X	
POWER BOX	CSAH 51	103+72.4	72.7 LT			X	
XCEL (BUR)	CSAH 51	103+76.9 TO 104+55.4	64.2 LT TO 32.4 RT			X	
XCEL (BUR)	CSAH 51	104+55.4 TO 105+18.5	32.4 RT TO 43.2 RT			X	
XCEL (BUR)	CSAH 51	105+19.5 TO 105+48.0	43.2 RT TO 31.7 LT			X	

NOTES:

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5 CONFLICT WITH PROPOSED STORM PIPE CROSSING INTO POWER LINE.

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

DESIGN BY: R. MANKE
CAD BY: R. MANKE
CHECKED BY: S. PARK
LAST REVISION: / /

UTILITY TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 31 / 336

CENTERPOINT ENERGY MINNESOTA GAS INPLACE UTILITIES SUNSET DR (CSAH 51)										0
STRUCTURE TYPE	SIZE	ALIGNMENT	STATION TO STATION	OFFSET TO OFFSET (FT)	EXIST. ELEV.	PROPOSED ELEV.	ACTIONS			REMARKS
							ADJUST	RELOCATE	LEAVE AS IS	
IGAS MAIN	3"	CSAH 51	99+70.8 TO 99+67.1	24.7 RT TO 275.9 RT					X	
IGAS MAIN	3"	CSAH 51	99+70.8 TO 100+35.3	24.7 RT TO 24.4 RT				X		PROPOSED IMH 202
IGAS VALVE		CSAH 51	100+35.2	200.1 LT	944.20				X	
IGAS MAIN	6"	CSAH 51	100+35.2 TO 100+35.3	203.5 LT TO 31.1 RT					X	
IGAS MAIN	6"	CSAH 51	100+35.3 TO 100+42.9	31.1 RT TO 31.2 RT					X	
IGAS MAIN	6"	CSAH 51	100+42.9 TO 100+52.7	31.2 RT TO 37.3 RT					X	
IGAS MAIN	6"	CSAH 51	100+52.7 TO 100+84.4	37.3 RT TO 24.4 RT					X	
IGAS MAIN	6"	CSAH 51	100+84.4 TO 101+84.7	24.4 RT TO 29.4 RT					X	
IGAS MAIN	6"	CSAH 51	101+71.9 TO 101+84.2	194.7 LT TO 24.6 LT					X	
IGAS MAIN	2"	CSAH 51	101+79.5 TO 101+84.2	14.6 RT TO 24.6 LT					X	
IGAS MAIN	2"	CSAH 51	101+79.5 TO 101+85.5	14.6 RT TO 15.2 RT					X	
IGAS MAIN	2"	CSAH 51	101+79.5 TO 101+84.7	14.6 RT TO 12.8 RT					X	
IGAS MAIN	2"	CSAH 51	101+84.7 TO 101+85.5	29.4 RT TO 15.2 RT					X	
IGAS MAIN	2"	CSAH 51	101+84.7 TO 101+88.6	12.8 RT TO 17.8 LT					X	
IGAS MAIN	2"	CSAH 51	101+86.1 TO 101+88.6	47.5 LT TO 17.8 LT					X	
IGAS MAIN	2"	CSAH 51	101+88.9 TO 102+25.7	26.6 LT TO 41.8 LT					X	
IGAS MAIN	6"	CSAH 51	101+88.3 TO 102+03.5	191.3 LT TO 52.7 LT					X	
IGAS MAIN	6"	CSAH 51	102+33.8 TO 102+33.9	33.0 RT TO 26.7 RT					X	
IGAS MAIN	6"	CSAH 51	102+33.8 TO 103+35.9	33.0 RT TO 33.7 RT					X	
IGAS MAIN	6"	CSAH 51	103+35.9 TO 105+43.0	33.7 RT TO 24.9 RT					X	
IGAS MAIN	6"	CSAH 51	105+43.0 TO 106+67.3	24.9 RT TO 169.8 RT					X	
IGAS MAIN	6"	CSAH 51	105+43.0 TO 111+80.8	24.9 RT TO 23.4 RT			X			VERTICAL ADJUSTMENT
IGAS MAIN	2"	CSAH 51	105+55.0 TO 105+57.3	25.2 RT TO 31.3 LT					X	
IGAS VALVE		CSAH 51	105+55.2	20.4 RT	938.78				X	
IGAS MAIN	2"	CSAH 51	105+57.3 TO 104+95.2	31.3 LT TO 102.6 LT					X	
IGAS VALVE		CSAH 51	105+57.3	31.3 LT	940.08				X	
IGAS VALVE		CSAH 51	105+69.6	56.0 RT	940.61				X	
IGAS MAIN	2"	CSAH 51	111+80.8 TO 117+58.4	23.4 RT TO 22.7 RT					X	
IGAS MAIN	2"	CSAH 51	114+35.0 TO 114+35.8	133.8 LT TO 92.8 LT					X	
IGAS MAIN	2"	CSAH 51	114+35.7 TO 114+49.9	92.8 LT TO 91.7 LT					X	
IGAS MAIN	2"	CSAH 51	114+49.9 TO 114+51.5	91.7 LT TO 24.3 RT					X	
IGAS VALVE		CSAH 51	117+36.6	25.3 RT	930.72				X	
IGAS MAIN	6"	CSAH 51	117+58.4 TO 118+51.4	22.7 RT TO 27.5 RT				X		PROPOSED STORM JELLYFISH
IGAS MAIN	1"	CSAH 51	118+45.0 TO 118+50.1	27.6 RT TO 301.7 RT					X	
IGAS MAIN	1"	CSAH 51	118+45.8 TO 118+50.1	449.4 RT TO 301.7 RT					X	
IGAS MAIN	6"	CSAH 51	118+48.8 TO 121+20.0	15.8 LT TO 16.0 LT					X	
IGAS MAIN	6"	CSAH 51	118+51.4 TO 118+48.8	27.5 RT TO 15.8 LT				X		PROPOSED STORM JELLYFISH
IGAS MAIN	1"	CSAH 51	121+06.6 TO 121+07.5	16.0 LT TO 11.1 LT						
IGAS MAIN	6"	CSAH 51	121+20.0 TO 126+58.9	16.0 LT TO 22.6 LT					X	
IGAS MAIN	1"	CSAH 51	121+20.0 TO 121+20.8	16.0 LT TO 35.9 LT					X	

Hennepin

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

DESIGN BY: R. MANKE
CAD BY: R. MANKE
CHECKED BY: S. PARK
LAST REVISION: / /

UTILITY TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 32 / 336

CENTERPOINT ENERGY MINNESOTA GAS INPLACE UTILITIES SUNSET DR (CSAH 51)											0
STRUCTURE TYPE	SIZE	STATION TO STATION			OFFSET TO OFFSET (FT)			EXIST. ELEV.	PROPOSED ELEV.	ACTIONS			REMARKS
										ADJUST	RELOCATE	LEAVE AS IS	
IGAS MAIN	6"	CSAH 51	126+58.9	TO 127+61.6	22.6 LT	TO 2.8 RT				X			VERTICAL ADJUSTMENT
IGAS MAIN	6"	CSAH 51	127+47.1	TO 127+65.1	20.1 LT	TO 5.8 LT						X	VERTICAL ADJUSTMENT
IGAS MAIN	6"	CSAH 51	127+47.1	TO 127+95.6	20.1 LT	TO 107.8 LT						X	
IGAS MAIN	6"	CSAH 51	127+61.6	TO 131+54.6	2.8 RT	TO 29.0 LT			R			X	
IGAS MAIN	6"	CSAH 51	127+61.6	TO 127+65.0	2.8 RT	TO 5.9 LT				X			VERTICAL ADJUSTMENT
IGAS MAIN	1"	CSAH 51	127+96.9	TO 127+64.9	105.4 LT	TO 5.6 LT						X	
IGAS MAIN	6"	CSAH 51	129+06.7	TO 127+61.6	13.6 LT	TO 2.8 RT				X			VERTICAL ADJUSTMENT
IGAS MAIN	6"	CSAH 51	131+56.2	TO 134+50.3	28.4 LT	TO 7.8 LT						X	
IGAS MAIN	1"	CSAH 51	131+56.2	TO 131+53.6	28.4 LT	TO 15.9 LT						X	
IGAS MAIN	6"	CSAH 51	134+50.3	TO 135+96.8	7.8 LT	TO 22.6 LT						X	
IGAS MAIN	6"	CSAH 51	135+96.8	TO 136+61.7	22.6 LT	TO 21.2 LT						X	
IGAS VALVE		CSAH 51	135+96.8		22.6 RT			931.44				X	
I_ABAND GAS		CSAH 51	99+59.4	TO 100+35.2	183.7 LT	TO 186.0 LT						X	ABANDONED GAS LINE
I_ABAND GAS		CSAH 51	101+88.3	TO 102+04.11	191.3 LT	TO 54.2 LT						X	ABANDONED GAS LINE

Hennepin

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

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UTILITY TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 33 / 336

CENTERPOINT ENERGY MINNESOTA GAS INPLACE UTILITIES SHADYWOOD RD (CSAH 19)												0
STRUCTURE TYPE	SIZE	STATION TO STATION			OFFSET TO OFFSET			EXIST. ELEV.	PROPOSED ELEV.	ACTIONS			REMARKS
										ADJUST	RELOCATE	LEAVE AS IS	
IGAS MAIN	6"	CSAH 19	201+36.6	TO 203+56.7	7.8	LT	TO 5.4 LT					X	
IGAS MAIN	6"	CSAH 19	202+24.7		5.3	LT		946.57					
IGAS MAIN	6"	CSAH 19	203+56.7	TO 204+09.2	13.3	LT	TO 17.0 LT					X	
IGAS MAIN	6"	CSAH 19	204+09.2	TO 205+86.7	17.0	LT	TO 11.2 LT					X	
IGAS MAIN	6"	CSAH 19	204+50.3	TO 204+42.3	28.5	LT	TO 28.4 LT					X	
IGAS MAIN	6"	CSAH 19	204+50.3	TO 204+52.8	28.5	LT	TO 15.0 LT					X	
IGAS MAIN	6"	CSAH 19	204+50.3	TO 207+36.0	28.5	LT	TO 38.5 LT					X	
IGAS MAIN	6"	CSAH 19	204+72.9	TO 205+86.7	15.5	LT	TO 11.2 LT					X	
IGAS MAIN	6"	CSAH 19	206+52.7	TO 206+77.2	213.5	LT	TO 72.6 LT					X	
IGAS MAIN	6"	CSAH 19	206+60.9	TO 206+79.5	318.9	LT	TO 316.4 LT					X	
IGAS MAIN	6"	CSAH 19	206+77.2	TO 209+61.8	72.6	LT	TO 27.5 RT					X	
IGAS MAIN	6"	CSAH 19	206+77.4	TO 208+19.2	16.3	LT	TO 23.3 LT					X	
IGAS MAIN	6"	CSAH 19	206+79.5	TO 206+82.8	316.4	LT	TO 213.6 LT					X	
IGAS MAIN	6"	CSAH 19	206+85.9	TO 207+35.9	57.9	LT	TO 38.5 LT					X	
IGAS MAIN	6"	CSAH 19	207+05.8	TO 208+22.8	29.1	RT	TO 41.7 LT					X	
IGAS MAIN	6"	CSAH 19	207+36.0	TO 208+22.8	38.5	LT	TO 41.7 LT					X	
IGAS MAIN	6"	CSAH 19	208+18.8	TO 208+19.2	31.9	LT	TO 23.3 LT					X	
IGAS MAIN	6"	CSAH 19	208+18.8	TO NORTH	31.9	LT						X	
IGAS MAIN	6"	CSAH 19	208+22.8	TO 208+27.2	41.7	LT	TO 28.3 LT					X	
IGAS MAIN	6"	CSAH 19	208+22.8	TO NORTH	41.7	LT						X	
IGAS MAIN	6"	CSAH 19	208+27.2	TO 209+61.7	28.3	RT	TO 27.4 RT					X	
I_ABAND GAS		CSAH 19	208+28.6	TO 209+57.1	25.1	LT	TO 29.1 LT						ABANDONED GAS LINE
I_ABAND GAS		CSAH 19	209+57.1	TO 209+57.3	29.1	LT	TO 21.5 LT						ABANDONED GAS LINE
I_ABAND GAS		CSAH 19	209+57.3	TO 209+90.4	21.5	LT	TO 23.0 LT						ABANDONED GAS LINE

MET COUNCIL INPLACE SANITARY SHADYWOOD DR (CSAH 19)																P
STRUCTURE NUMBER	ALIGNMENT	STATION TO STATION			OFFSET TO OFFSET (FT)			INPLACE TOP OF CASTING	FLOWLINE ELEV	FLOWS TO STRUCTURE	PIPE SIZE	PIPE LENGTH	LEAVE AS IS	REMOVE DRAINAGE STRUCTURE	RECONSTRUCT DRAINAGE STRUCTURE	REMOVE SEWER PIPE (STORM)	FILL AND ABANDON PIPE	ADJUST FRAME AND RING CASTING	SALVAGE CASTING	INSTALL CASTING	REMARKS
								LIN FT	LIN FT		INCH	LIN FT		EACH	LIN FT	LIN FT	LIN FT	EACH	EACH	EACH	
ISMH 320	CSAH 19	203+07.3			14.8 LT					ISMH 318	12" FORCE MAIN							1			VERIFY IN FIELD
	CSAH 19	204+21.7	TO	207+35.1	10.8 LT	TO	39.7LT			ISMH 318	12" FORCE MAIN										
ISMH 318	CSAH 19	207+35.1			39.7 LT			936.73			12" FORCE MAIN										NEED DATA
	CSAH 19	207+35.1	TO	208+59.4	39.7 LT	TO	39.8LT			FLOWS NORTH	12" FORCE MAIN										

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

DESIGN BY: R. MANKE
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CHECKED BY: S. PARK
LAST REVISION: / /

UTILITY TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 34 / 336

HENNEPIN COUNTY TRAFFIC INPLACE BURIED F/O SUNSET DRIVE - SHORELINE DRIVE								Q
STRUCTURE TYPE	ALIGNMENT	STATION TO STATION	OFFSET TO OFFSET	T/C ELEV.	ACTIONS			REMARKS
					ADJUST	RELOCATE	LEAVE AS IS	
BUR_COMM F/O	CSAH 51	99+47.4 TO 99+55.4	140.6 RT TO 129.7 RT				X	
IHH	CSAH 51	99+54.2	126.8 RT				X	
BUR_COMM F/O	CSAH 51	99+54.2 TO 99+55.4	126.8 RT TO 129.7 RT				X	
BUR_COMM F/O	CSAH 51	99+54.2 TO 99+55.2	126.8 RT TO 77.5 RT				X	
IHH	CSAH 51	99+55.2	77.5 RT				X	
BUR_COMM F/O	CSAH 51	99+55.2 TO 99+59.0	77.5 RT TO 58.9 LT				X	
BUR_COMM F/O	CSAH 51	99+55.2 TO 100+28.6	77.5 RT TO 78.6 RT				X	
IHH	CSAH 51	99+55.4	129.7 RT				X	
IHH	CSAH 51	99+59.0	58.9 LT				X	
BUR_COMM F/O	CSAH 51	99+59.0 TO 99+99.4	58.9 LT TO 58.8 RT				X	
IHH	CSAH 51	99+99.4	58.8 LT				X	
BUR_COMM F/O	CSAH 51	99+99.4 TO 100+31.8	58.8 LT TO 59.7 LT				X	
IHH	CSAH 51	100+28.6	78.6 RT				X	
IHH	CSAH 51	100+31.8	59.7 LT				X	
IHH	CSAH 51	100+37.2	89.5 RT				X	
IHH	CSAH 51	100+57.5	32.1 LT				X	

ARVIG INPLACE BURIED F/O SUNSET DRIVE - SHORELINE DRIVE								R
STRUCTURE TYPE	ALIGNMENT	STATION TO STATION	OFFSET TO OFFSET	T/C ELEV.	ACTIONS			REMARKS
					ADJUST	RELOCATE	LEAVE AS IS	
BUR_COMM F/O	CSAH 51	99+49.3 TO 99+54.0	165.1 RT TO 226.3 LT				X	
BUR_COMM F/O	CSAH 51	99+51.9 TO 99+58.1	160.7 RT TO 226.5 LT				X	
BUR_COMM F/O	CSAH 51	100+38.9 TO 99+49.3	169.6 RT TO 165.1 RT				X	
BUR_COMM F/O	CSAH 51	100+38.9 TO 99+51.9	166.8 RT TO 160.7 RT				X	

ZAYO INPLACE BURIED F/O SUNSET DRIVE - SHORELINE DRIVE								S
STRUCTURE TYPE	ALIGNMENT	STATION TO STATION	OFFSET TO OFFSET	T/C ELEV.	ACTIONS			REMARKS
					ADJUST	RELOCATE	LEAVE AS IS	
BUR_COMM F/O	CSAH 51	100+20.6 TO 100+25.9	209.9 LT TO 63.0 LT				X	
BUR_COMM F/O	CSAH 51	100+25.9 TO 100+27.2	63.0 LT TO 250.9 RT				X	

Hennepin

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

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UTILITY TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 35 / 336

INPLACE UTILITIES

- STORM SEWER PIPE
- CATCH BASIN
- MANHOLE STRUCTURE
- POWER POLE
- SANITARY SEWER PIPE
- WATER PIPE
- WATER VALVE
- HYDRANT
- OHU — OVERHEAD POWER (SERVICE)
- F/O — UNDERGROUND COMMUNICATIONS IN CONDUIT
- OHU — CABLE TV
- FIBER COMMUNICATIONS
- P — POWER
- OHP — OVERHEAD POWER (EXCEL)
- GAS VALVE
- G — GAS MAIN (CENTERPOINT)
- G (A) — ABANDONED GAS MAIN (CENTERPOINT)
- G — GAS SERVICE
- OHU — OVERHEAD COMMUNICATIONS
- CONSTRUCTION LIMITS
- INPLACE R/W
- NEW R/W
- DE — DRAINAGE EASEMENT
- WE — WALL EASEMENT
- TE — TEMP EASEMENT
- XXX / XXX — INPLACE STRUCTURE NUMBER

DAKOTA RAIL REGIONAL TRAIL

SCALE 0' 25' 50'

4204

4202

WEST ARM DR

ICB 211

ISMH 303

ISMH 302

ICB 210

IMH 209

LAKEVIEW LOFTS
4100
SKINGEVITY MED SPA

℄ CSAH 51

IMH 207

IMH 208

ISMH 301

IMH 224

SPRING ST

4138

ICB 206

ICB 203

ICB 205

SHORELINE DR (CSAH 15)

SUNSET DR (CSAH 51)

99

100

101

102

103

104

105

IRW

CONSTRUCTION LIMITS

NEW R/W

SHORELINE PL

NORTHERN AVE

ICB 212

IMH 213

THE MIST APARTMENTS LLC
4201

GENTLE DENTISTRY
4100

ICB 204

IMH 202

ICB 201

BEGIN HENN CO PROJ 2182000
SAP 027-651-011
SAP 027-594-005
SUNSET DRIVE STA 100+08.15

MATCHLINE 106+00.00

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.

AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER — 49073 LICENSE NO. — / / DATE

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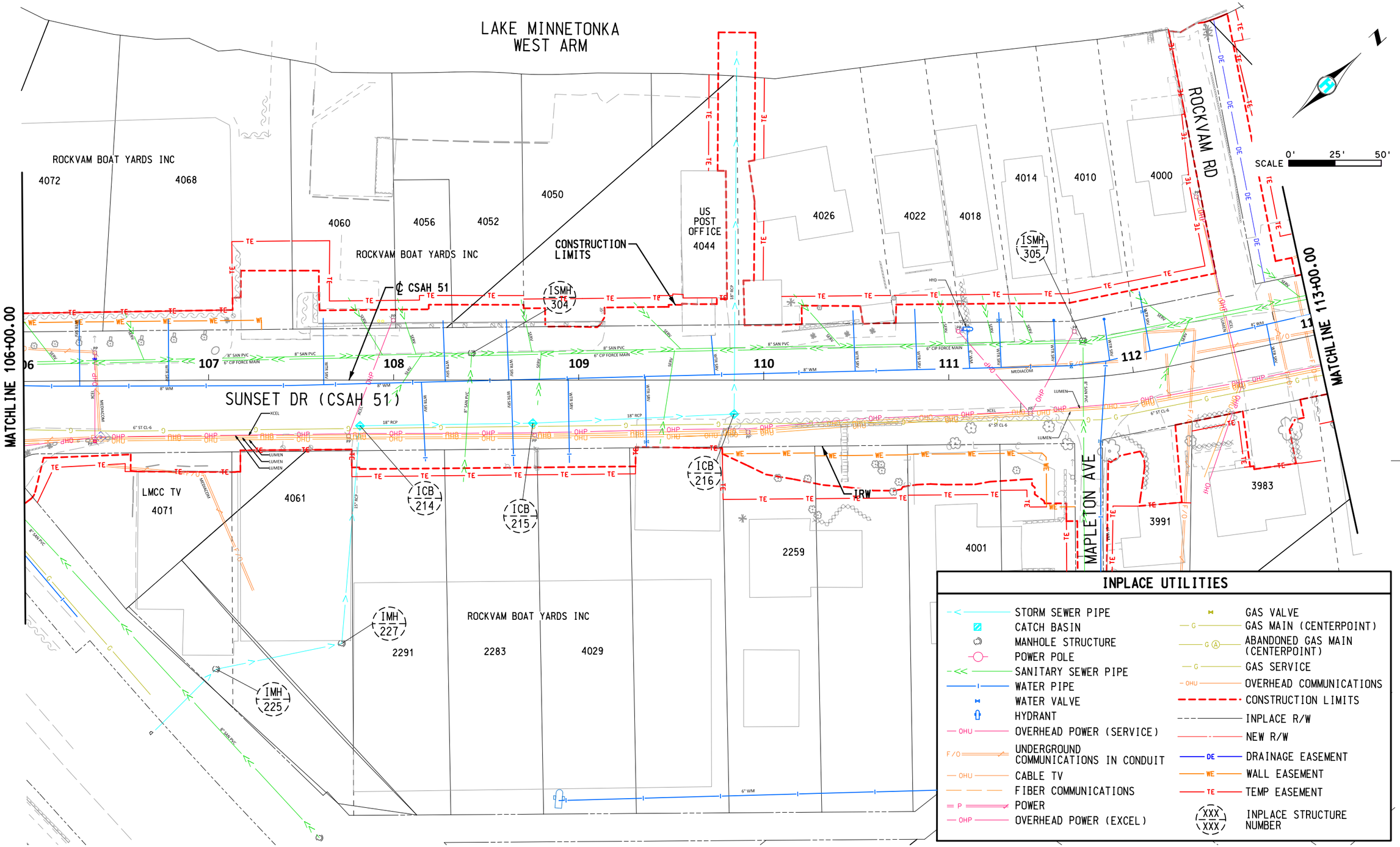
INPLACE UTILITY PLAN

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 36 / 336



INPLACE UTILITIES

- STORM SEWER PIPE
- CATCH BASIN
- MANHOLE STRUCTURE
- POWER POLE
- SANITARY SEWER PIPE
- WATER PIPE
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- CONSTRUCTION LIMITS
- INPLACE R/W
- NEW R/W
- DRAINAGE EASEMENT
- WALL EASEMENT
- TEMP EASEMENT
- INPLACE STRUCTURE NUMBER

Hennepin

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INPLACE UTILITY PLAN

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 37 / 336

INPLACE UTILITIES

- STORM SEWER PIPE
- CATCH BASIN
- MANHOLE STRUCTURE
- POWER POLE
- SANITARY SEWER PIPE
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- WE — WALL EASEMENT
- TE — TEMP EASEMENT
- XXX / XXX — INPLACE STRUCTURE NUMBER

SCALE 0' 25' 50'

MATCHLINE 120+00.00

MATCHLINE 113+00.00

℄ CSAH 51

SUNSET DR (CSAH 51)

PARK LN

THOR THOMPSON PARK

3901

CONSTRUCTION LIMITS

IRW

LIFT STATION NO. 2

3990 3980 3960 3950 3940 3930 3920 3910 3900 3896 3890 3884 3888 3880 3975 3965

APR 238, APR 233, APR 232, APR 239, APR 228, APR 240, APR 234, APR 235

ICB 217, ICB 220, ICB 219, ICB 221, ICB 222, ICB 218

ISMH 306, ISMH 307, ISMH 308, ISMH 309, ISMH 310

114 115 116 117 118 119

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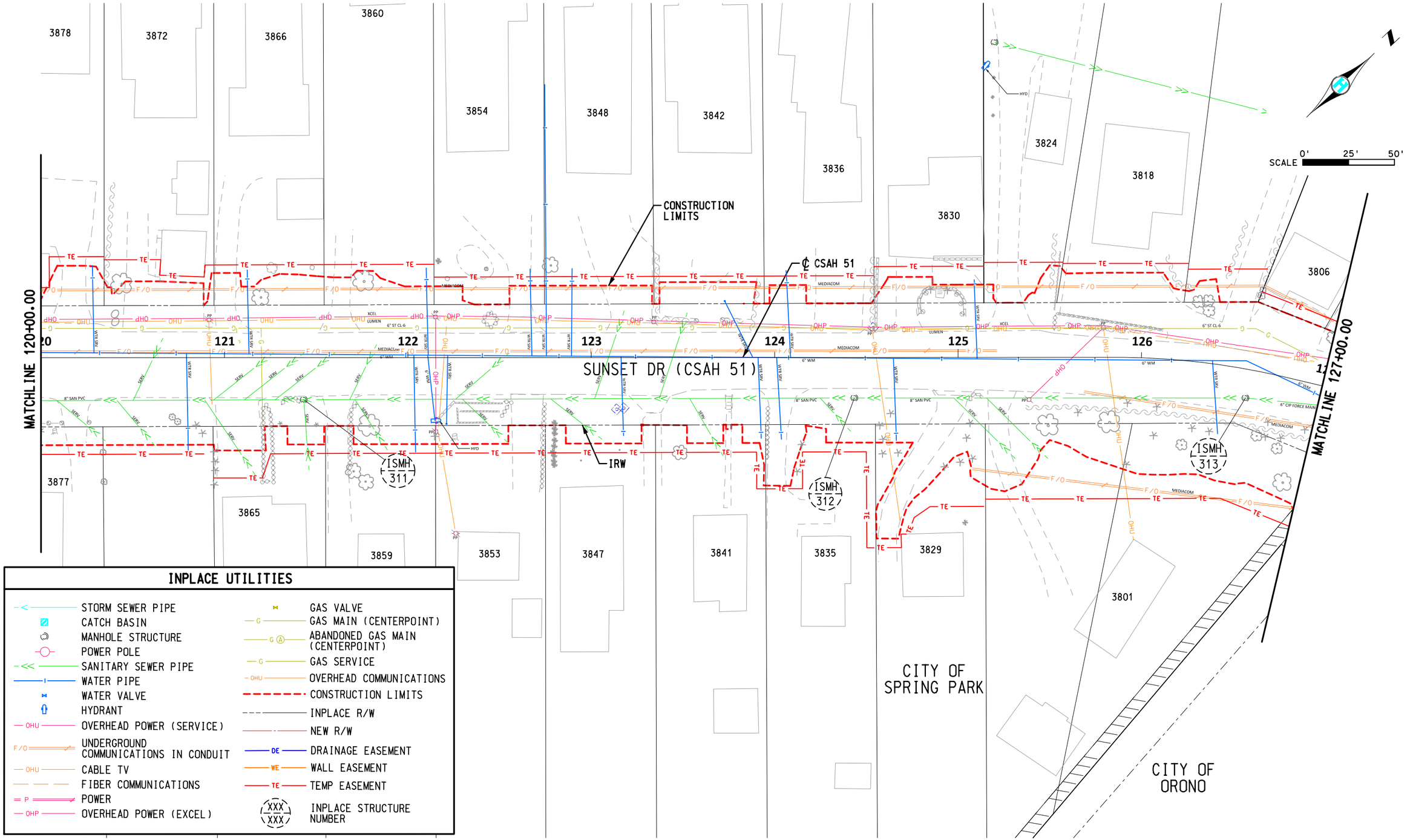
INPLACE UTILITY PLAN

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 38 / 336



INPLACE UTILITIES

- STORM SEWER PIPE
- CATCH BASIN
- MANHOLE STRUCTURE
- POWER POLE
- SANITARY SEWER PIPE
- WATER PIPE
- WATER VALVE
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- GAS SERVICE
- OVERHEAD COMMUNICATIONS
- CONSTRUCTION LIMITS
- INPLACE R/W
- NEW R/W
- DRAINAGE EASEMENT
- WALL EASEMENT
- TEMP EASEMENT
- INPLACE STRUCTURE NUMBER

Hennepin

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INPLACE UTILITY PLAN

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SHEET 39 / 336

INPLACE UTILITIES

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- CATCH BASIN
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- CONSTRUCTION LIMITS
- INPLACE R/W
- NEW R/W
- DE — DRAINAGE EASEMENT
- WE — WALL EASEMENT
- TE — TEMP EASEMENT
- XXX / XXX — INPLACE STRUCTURE NUMBER

LAKE MINNETONKA WEST ARM

SCALE 0' 25' 50'

LORD FLETCHER'S OLD LAKE LODGE
3746

℄ CSAH 51

ICB 223

MATCHLINE 127+00.00

MATCHLINE 134+00.00

3800

DICKSON AVE

NEW R/W

LIFT STATION NO. 1

6" CIP FORCEMAIN

131

132

130

133

129

128

SUNSET DR (CSAH 51)

IRW

CONSTRUCTION LIMITS

ISMH 315

LORD FLETCHER'S OLD LAKE LODGE

3731

APR 236

APR 237

ICB 229

3791

ISMH 314

3781

3765

CITY OF SPRING PARK

DICKSON AVE EXT

CITY OF ORONO

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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LAST REVISION:	/ /

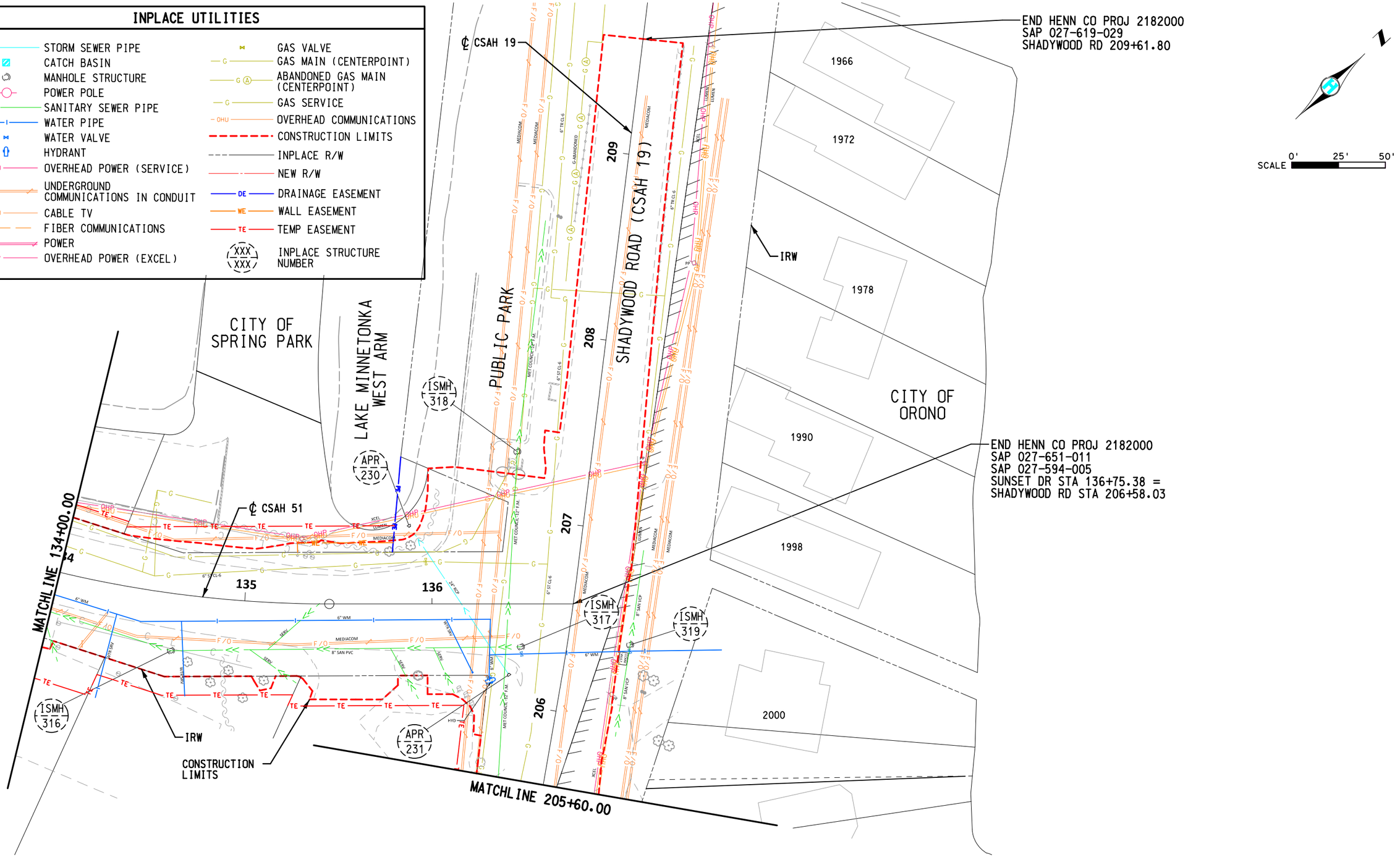
INPLACE UTILITY PLAN

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 40 / 336

INPLACE UTILITIES

- STORM SEWER PIPE
- CATCH BASIN
- MANHOLE STRUCTURE
- POWER POLE
- SANITARY SEWER PIPE
- WATER PIPE
- WATER VALVE
- HYDRANT
- OHU — OVERHEAD POWER (SERVICE)
- F/O — UNDERGROUND COMMUNICATIONS IN CONDUIT
- OHU — CABLE TV
- FIBER COMMUNICATIONS
- P — POWER
- OHP — OVERHEAD POWER (EXCEL)
- GAS VALVE
- G — GAS MAIN (CENTERPOINT)
- G A — ABANDONED GAS MAIN (CENTERPOINT)
- G — GAS SERVICE
- OHU — OVERHEAD COMMUNICATIONS
- CONSTRUCTION LIMITS
- INPLACE R/W
- NEW R/W
- DE — DRAINAGE EASEMENT
- WE — WALL EASEMENT
- TE — TEMP EASEMENT
- XXX / XXX — INPLACE STRUCTURE NUMBER



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.

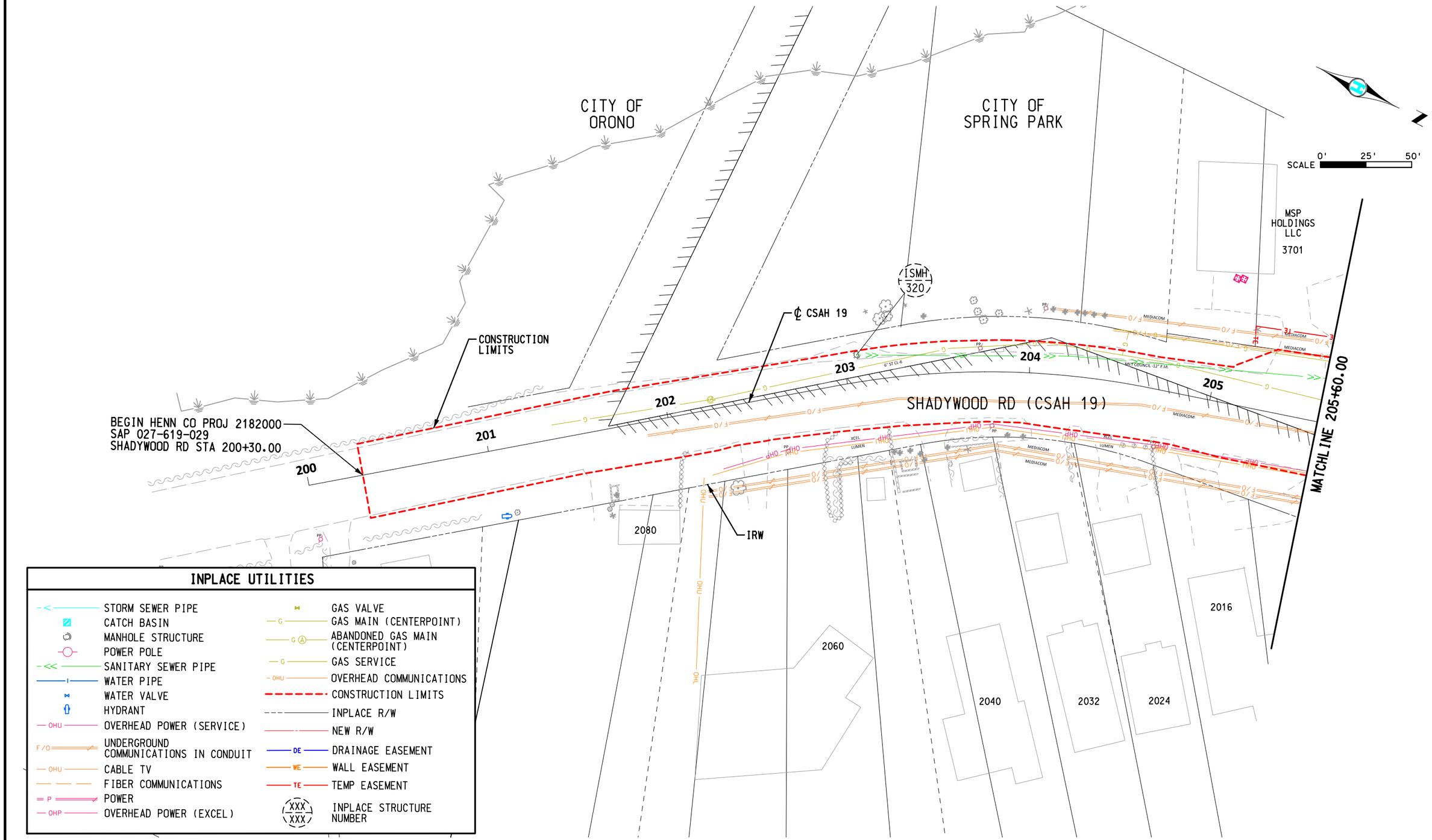
AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER — 49073 LICENSE NO. — / / DATE

DESIGN BY:	R. MANKE
CAD BY:	R. MANKE
CHECKED BY:	S. PARK
LAST REVISION:	/ /

INPLACE UTILITY PLAN

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 41 / 336



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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

DESIGN BY:	R. MANKE
CAD BY:	R. MANKE
CHECKED BY:	S. PARK
LAST REVISION:	/ /

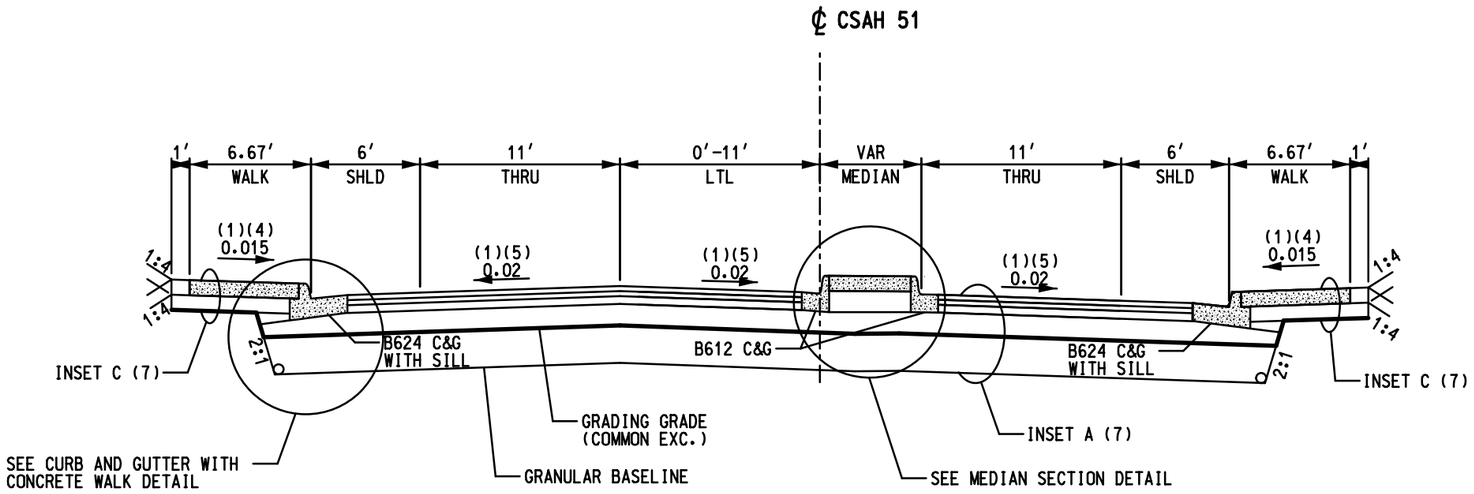
INPLACE UTILITY PLAN

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

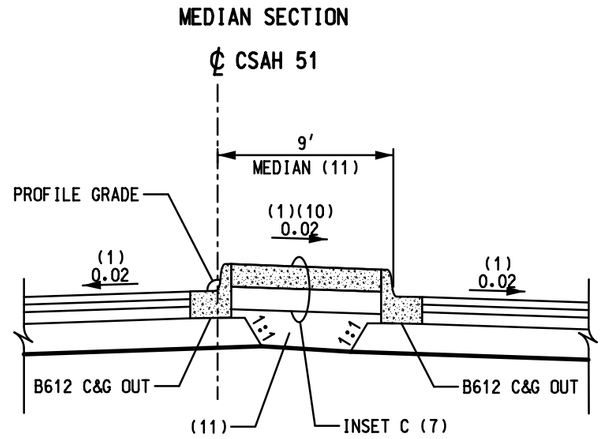
SHEET 42 / 336

ROADSIDE OPERATIONAL CLEAR ZONE OF 1.5' REQUIRED OUTSIDE CURB FACES

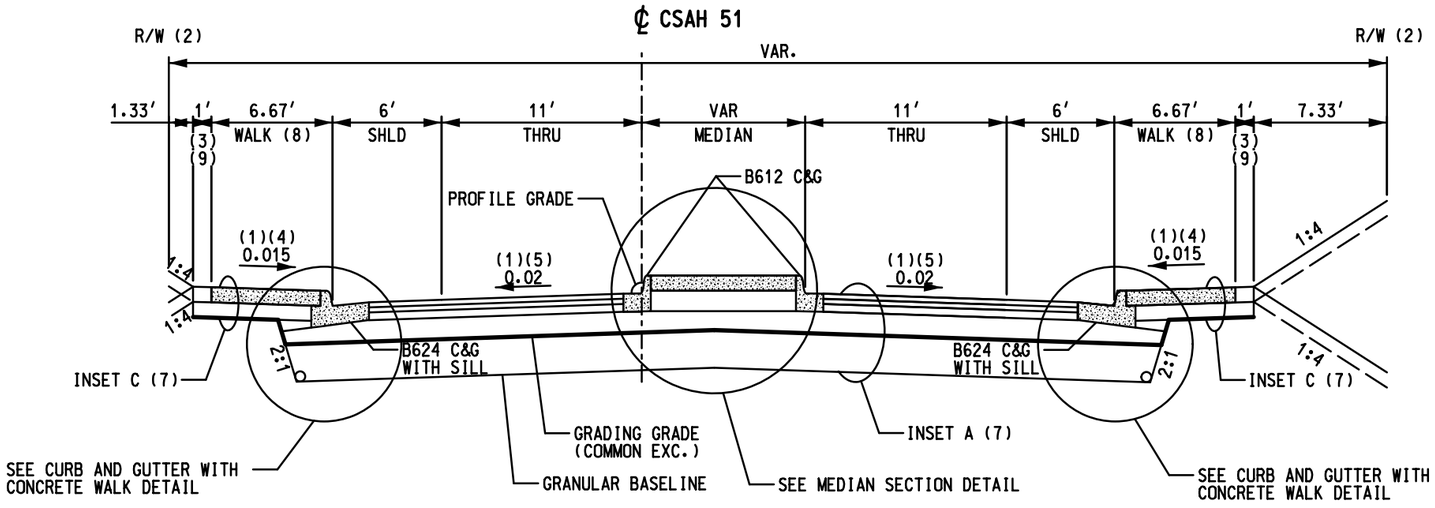
CSAH 51 STA 100+23.87 TO 103+42.51



MEDIAN SECTION



CSAH 51 STA 103+42.51 TO 105+07.11



GENERAL NOTES:

(1) ALL SLOPES ARE FT. PER FT.

(2) R/W = RIGHT OF WAY, TE = TEMPORARY EASEMENT

(3) ALL TOPSOIL WILL BE 6" DEPTH ORGANIC TOPSOIL BORROW

(4) TYPICAL WALK CROSS SLOPE (0.015 FT/FT MAX)

(5) TYPICAL ROADWAY CROSS SLOPE (SEE SUPERELEVATION/DRAINAGE PLANS FOR CROSS SLOPE INFORMATION)

(6) 4" CORRUGATED PE SUBSURFACE DRAIN PIPE AT LOCATIONS INDICATED IN SUPERELEVATION / DRAINAGE PLANS. SEE DETAILS ON MISC. DETAILS FOR ADDITIONAL INFORMATION

(7) SEE SHEET 47 FOR INSET DETAILS

(8) 6" AGGREGATE BASE CLASS 6 BELOW WALK AND DRIVEWAY AREA IS INCIDENTAL. EXTEND AGGREGATE BASE 6" BEYOND CONCRETE OR BITUMINOUS EDGES

(9) TOPSOIL & SEED OR SOD (SEE SUPEREL./DRAINAGE & TURF EST PLANS) OR EXTEND WALK TO MATCH EXISTING WALKS, STEP, WALKS, ETC.

(10) GENERAL WIDTH AND SLOPE. SEE CONSTRUCTION PLANS AND CROSS SECTIONS FOR VARIATIONS

(11) BACKFILL WITH SELECT GRADING MATERIAL

Hennepin

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.

AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

DESIGN BY:	A. BENTSON
CAD BY:	A. BENTSON
CHECKED BY:	S. PARK
LAST REVISION:	/ /

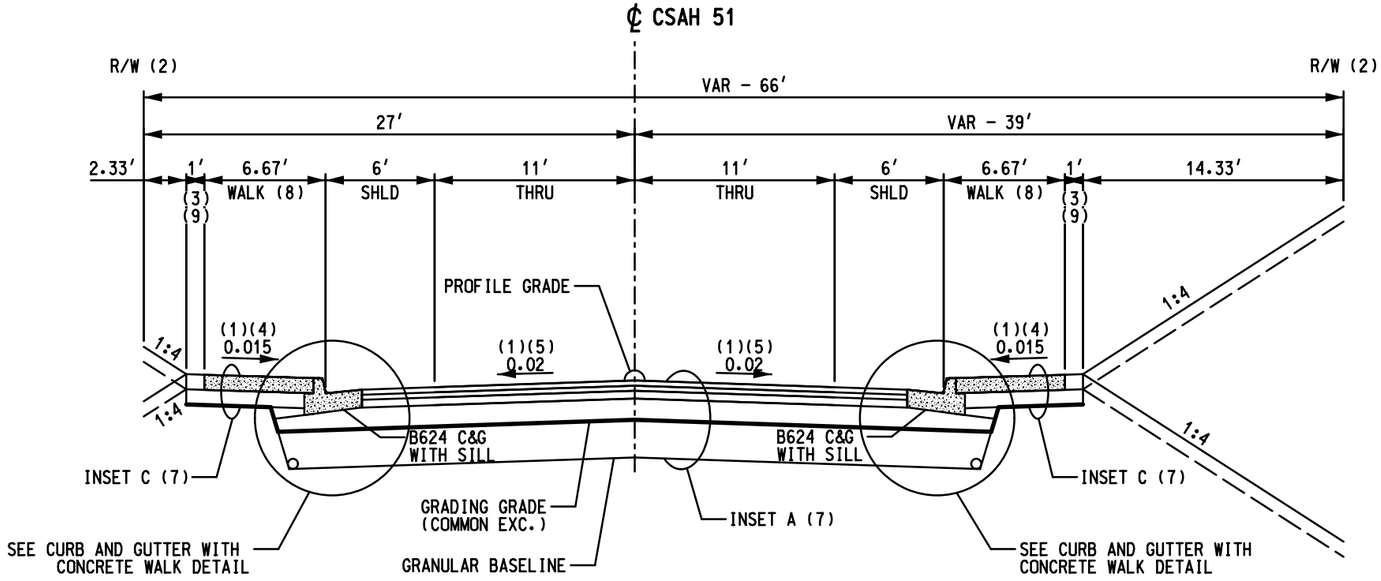
TYPICAL SECTIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

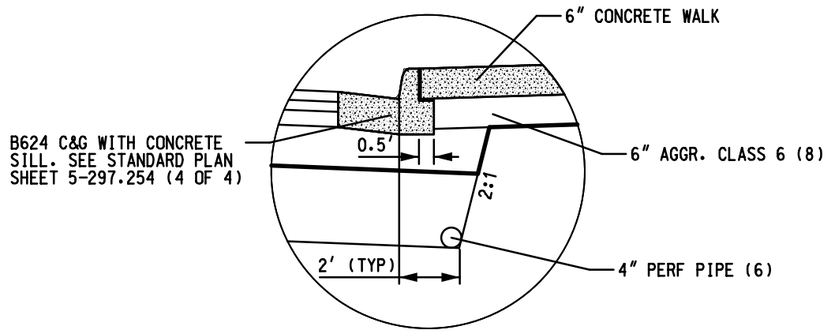
SHEET 43 / 336

ROADSIDE OPERATIONAL CLEAR ZONE OF 1.5' REQUIRED OUTSIDE CURB FACES

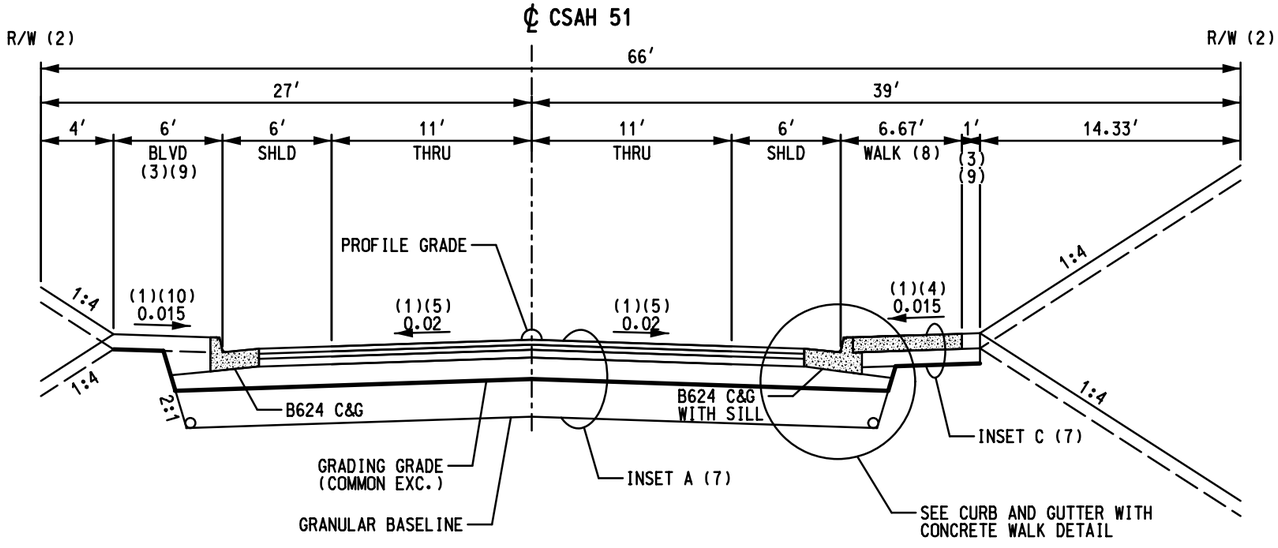
CSAH 51 STA 105+07.11 TO 109+92.48



CURB AND GUTTER WITH CONCRETE WALK



CSAH 51 STA 109+92.48 TO 136+58.31



GENERAL NOTES:

(1) ALL SLOPES ARE FT. PER FT.

(2) R/W = RIGHT OF WAY, TE = TEMPORARY EASEMENT

(3) ALL TOPSOIL WILL BE 6" DEPTH ORGANIC TOPSOIL BORROW

(4) TYPICAL WALK CROSS SLOPE (0.015 FT/FT MAX)

(5) TYPICAL ROADWAY CROSS SLOPE (SEE SUPERELEVATION/DRAINAGE PLANS FOR CROSS SLOPE INFORMATION)

(6) 4" CORRUGATED PE SUBSURFACE DRAIN PIPE AT LOCATIONS INDICATED IN SUPERELEVATION / DRAINAGE PLANS. SEE DETAILS ON MISC. DETAILS FOR ADDITIONAL INFORMATION

(7) SEE SHEET 47 FOR INSET DETAILS

(8) 6" AGGREGATE BASE CLASS 6 BELOW WALK AND DRIVEWAY AREA IS INCIDENTAL. EXTEND AGGREGATE BASE 6" BEYOND CONCRETE OR BITUMINOUS EDGES

(9) TOPSOIL & SEED OR SOD (SEE SUPEREL./DRAINAGE & TURF EST PLANS) OR EXTEND WALK TO MATCH EXISTING WALKS, STEP, WALKS, ETC.

(10) GENERAL WIDTH AND SLOPE. SEE CONSTRUCTION PLANS AND CROSS SECTIONS FOR VARIATIONS

(11) BACKFILL WITH SELECT GRADING MATERIAL

Hennepin

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.

AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

DESIGN BY:	A. BENTSON
CAD BY:	A. BENTSON
CHECKED BY:	S. PARK
LAST REVISION:	/ /

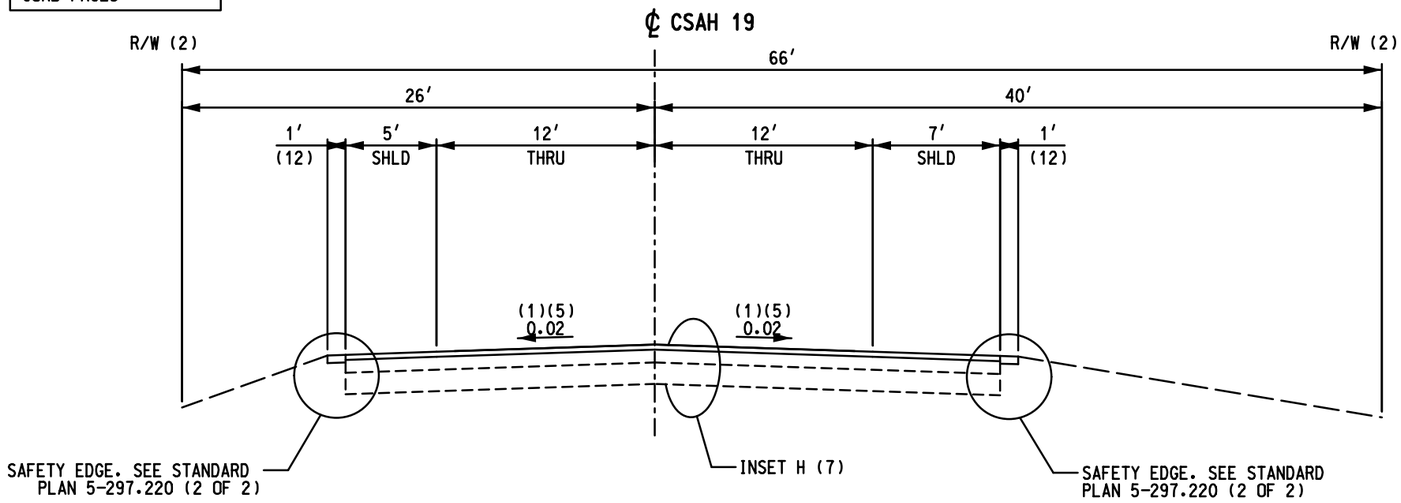
TYPICAL SECTIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

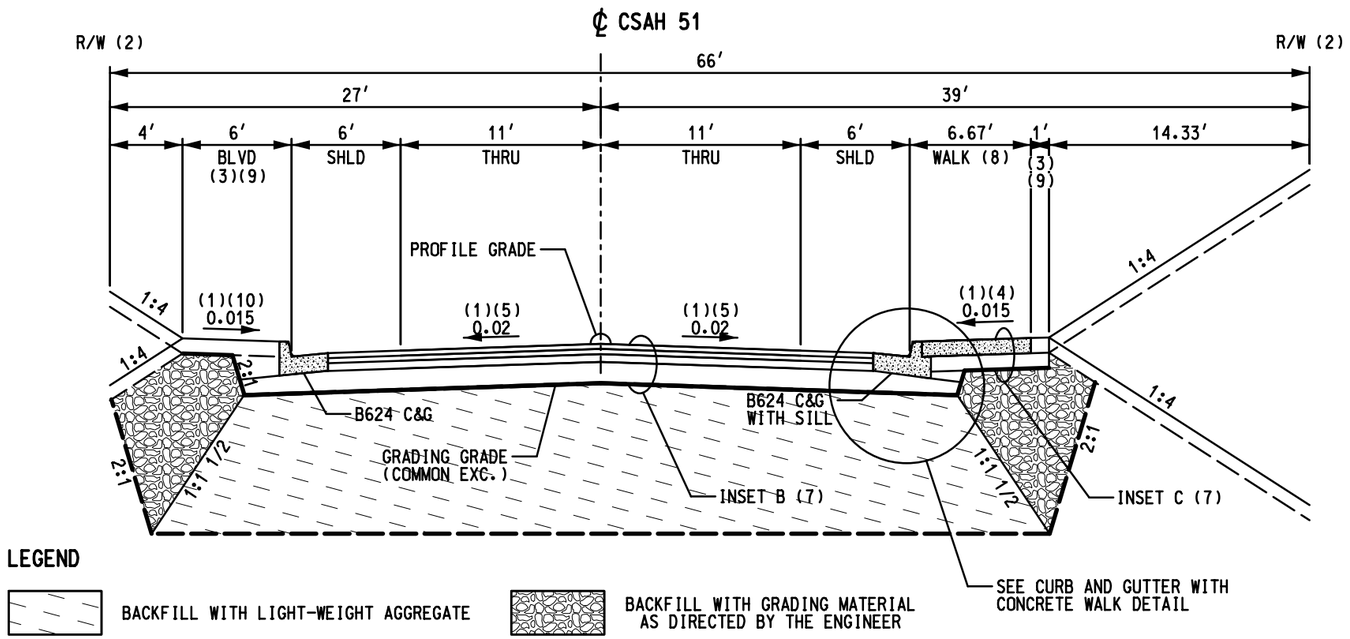
SHEET 44 / 336

ROADSIDE OPERATIONAL CLEAR ZONE OF 1.5' REQUIRED OUTSIDE CURB FACES

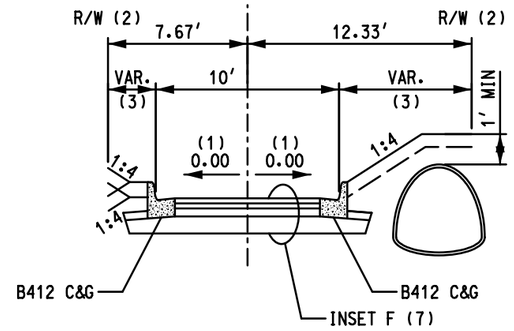
CSAH 19 STA 200+34.29 TO 209+63.06



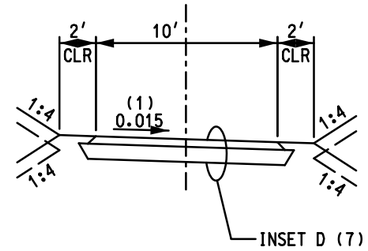
CSAH 51 STA 105+80 TO 109+50



LAKE ST STA 220+17.67 TO 221+74.27



℄ SHARED USE PATH



GENERAL NOTES:

(1) ALL SLOPES ARE FT. PER FT.

(2) R/W = RIGHT OF WAY, TE = TEMPORARY EASEMENT

(3) ALL TOPSOIL WILL BE 6" DEPTH ORGANIC TOPSOIL BORROW

(4) TYPICAL WALK CROSS SLOPE (0.015 FT/FT MAX)

(5) TYPICAL ROADWAY CROSS SLOPE (SEE SUPERELEVATION/DRAINAGE PLANS FOR CROSS SLOPE INFORMATION)

(6) 4" CORRUGATED PE SUBSURFACE DRAIN PIPE AT LOCATIONS INDICATED IN SUPERELEVATION / DRAINAGE PLANS. SEE DETAILS ON MISC. DETAILS FOR ADDITIONAL INFORMATION

(7) SEE SHEET 47 FOR INSET DETAILS

(8) 6" AGGREGATE BASE CLASS 6 BELOW WALK AND DRIVEWAY AREA IS INCIDENTAL. EXTEND AGGREGATE BASE 6" BEYOND CONCRETE OR BITUMINOUS EDGES

(9) TOPSOIL & SEED OR SOD (SEE SUPEREL./DRAINAGE & TURF EST PLANS) OR EXTEND WALK TO MATCH EXISTING WALKS, STEP, WALKS, ETC.

(10) GENERAL WIDTH AND SLOPE. SEE CONSTRUCTION PLANS AND CROSS SECTIONS FOR VARIATIONS

(11) BACKFILL WITH SELECT GRADING MATERIAL

(12) AGGREGATE SURFACING CL 2 TO BE PLACED AS DIRECTED BY THE ENGINEER.

LEGEND

BACKFILL WITH LIGHT-WEIGHT AGGREGATE

BACKFILL WITH GRADING MATERIAL AS DIRECTED BY THE ENGINEER

Hennepin

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

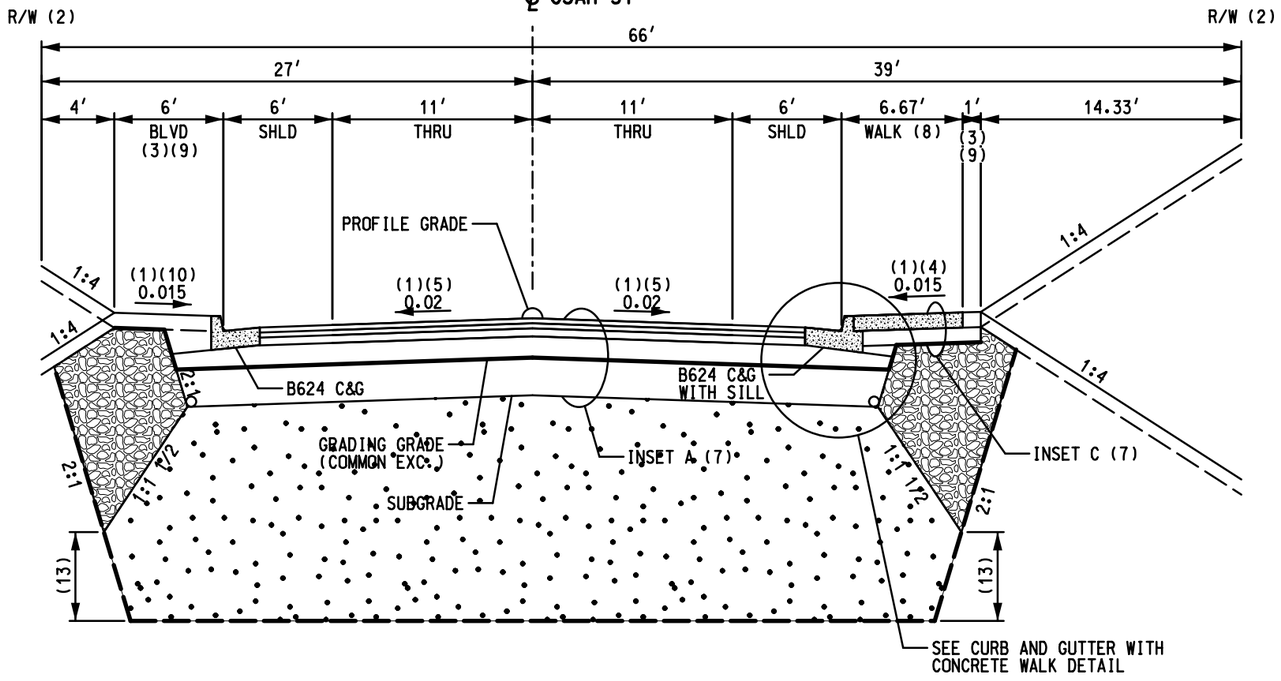
DESIGN BY:	A. BENTSON
CAD BY:	A. BENTSON
CHECKED BY:	S. PARK
LAST REVISION:	/ /

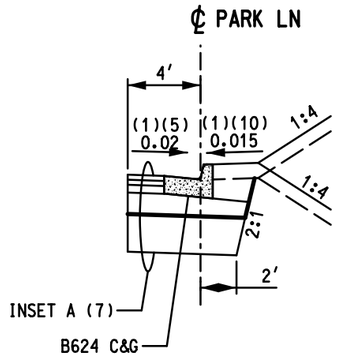
TYPICAL SECTIONS

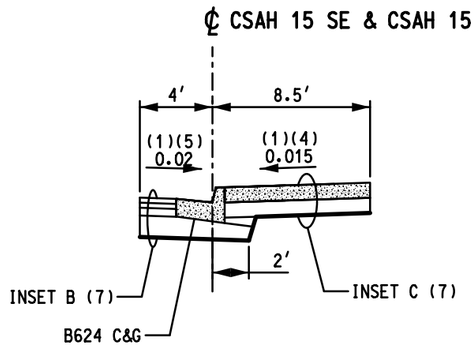
CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 45 / 336

CSAH 51 STA 114+00 TO 117+00, 119+00 TO 121+00 AND 135+80 TO 136+50 (14)







LEGEND

BACKFILL WITH SELECT GRANULAR BORROW MOD 10%

BACKFILL WITH GRADING MATERIAL AS DIRECTED BY THE ENGINEER

GENERAL NOTES:

(1) ALL SLOPES ARE FT. PER FT.

(2) R/W = RIGHT OF WAY, TE = TEMPORARY EASEMENT

(3) ALL TOPSOIL WILL BE 6″ DEPTH ORGANIC TOPSOIL BORROW

(4) TYPICAL WALK CROSS SLOPE (0.015 FT/FT MAX)

(5) TYPICAL ROADWAY CROSS SLOPE (SEE SUPERELEVATION/DRAINAGE PLANS FOR CROSS SLOPE INFORMATION)

(6) 4″ CORRUGATED PE SUBSURFACE DRAIN PIPE AT LOCATIONS INDICATED IN SUPERELEVATION / DRAINAGE PLANS. SEE DETAILS ON MISC. DETAILS FOR ADDITIONAL INFORMATION

(7) SEE SHEET 47 FOR INSET DETAILS

(8) 6″ AGGREGATE BASE CLASS 6 BELOW WALK AND DRIVEWAY AREA IS INCIDENTAL. EXTEND AGGREGATE BASE 6″ BEYOND CONCRETE OR BITUMINOUS EDGES

(9) TOPSOIL & SEED OR SOD (SEE SUPEREL./DRAINAGE & TURF EST PLANS) OR EXTEND WALK TO MATCH EXISTING WALKS, STEP, WALKS, ETC.

(10) GENERAL WIDTH AND SLOPE. SEE CONSTRUCTION PLANS AND CROSS SECTIONS FOR VARIATIONS

(11) BACKFILL WITH SELECT GRADING MATERIAL

(12) AGGREGATE SURFACING CL 2 TO BE PLACED AS DIRECTED BY THE ENGINEER.

(13) DEPTH EQUALS 1/3 EXCAVATION DEPTH.

(14) SEE CROSS SECTIONS AND PROFILE FOR AREAS OF MUCK EXCAVATION.

Hennepin

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.

AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

DESIGN BY:	A. BENTSON
CAD BY:	A. BENTSON
CHECKED BY:	S. PARK
LAST REVISION:	/ /

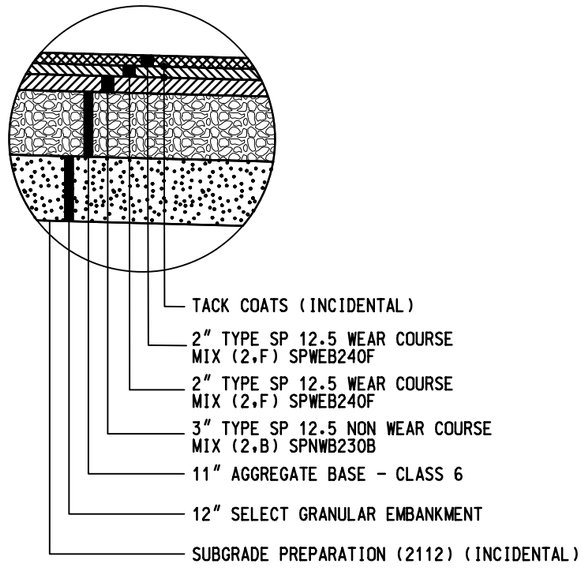
TYPICAL SECTIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 46 / 336

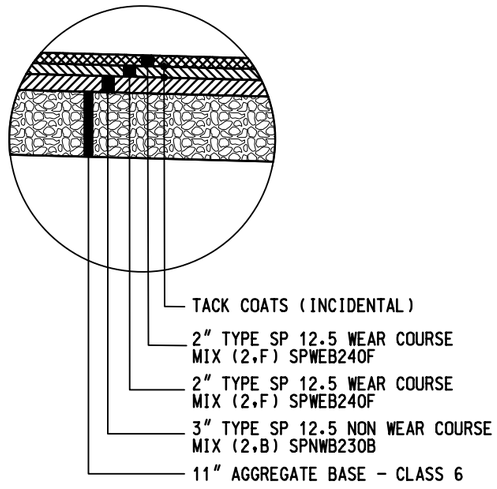
INSET A

ROAD - MAINLINE AND SIDE STREETS



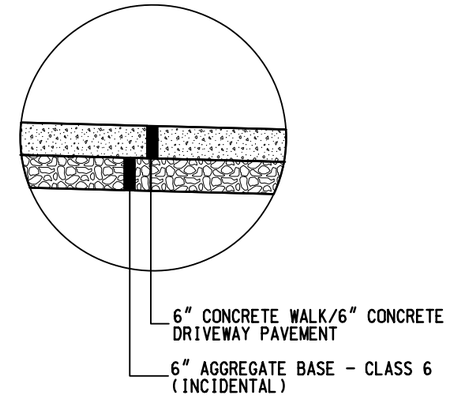
INSET B

ROAD - MAINLINE



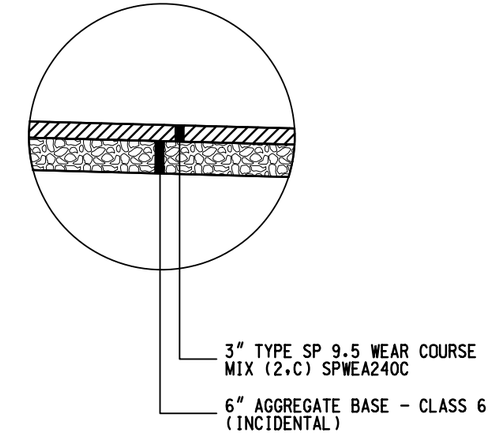
INSET C

CONCRETE WALK (1)
CONCRETE RESIDENTIAL DRIVEWAYS



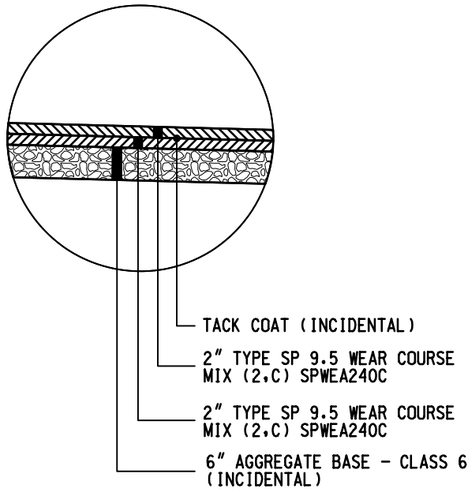
INSET D

SHARED USE PATH



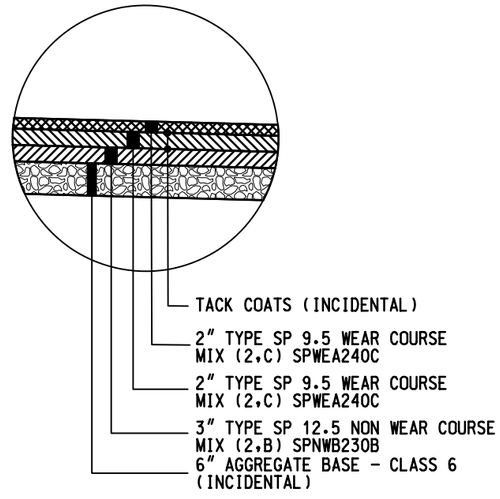
INSET E

BITUMINOUS RESIDENTIAL DRIVEWAYS



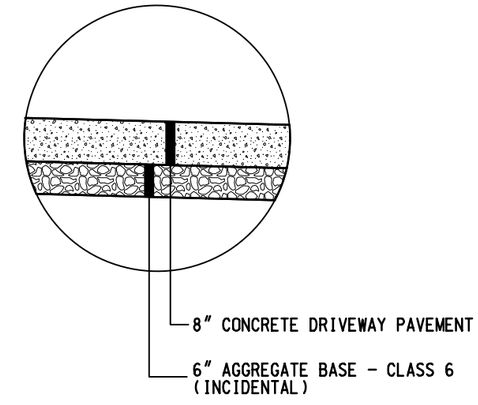
INSET F

BITUMINOUS COMMERCIAL DRIVEWAYS



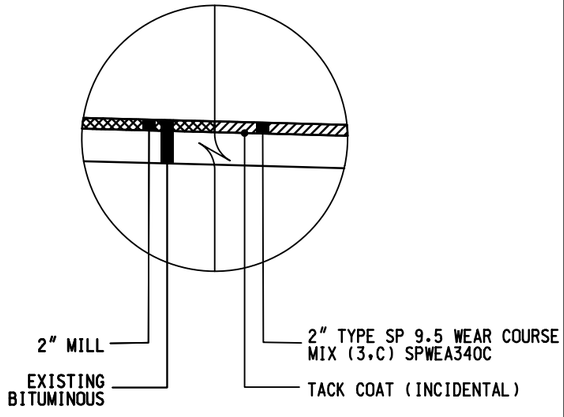
INSET G

CONCRETE COMMERCIAL DRIVEWAYS



INSET H

MILL AND OVERLAY



NOTES:
(1) FOR AREAS OF 4" CONCRETE WALK USE AGGREGATE BASE THICKNESS SHOWN IN INSET AND 4" CONCRETE DEPTH

Hennepin

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.

AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

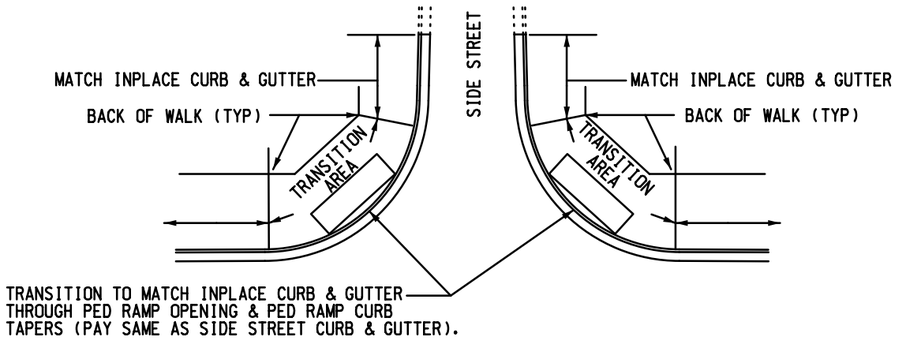
DESIGN BY:	A. BENTSON
CAD BY:	A. BENTSON
CHECKED BY:	S. PARK
LAST REVISION:	/ /

TYPICAL SECTIONS

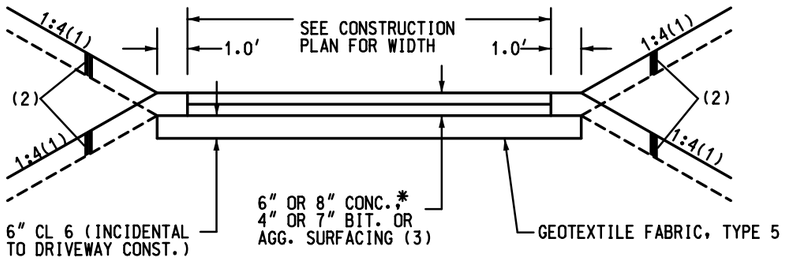
CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 47 / 336

CURB TRANSITION AT RADIUS END DETAILS



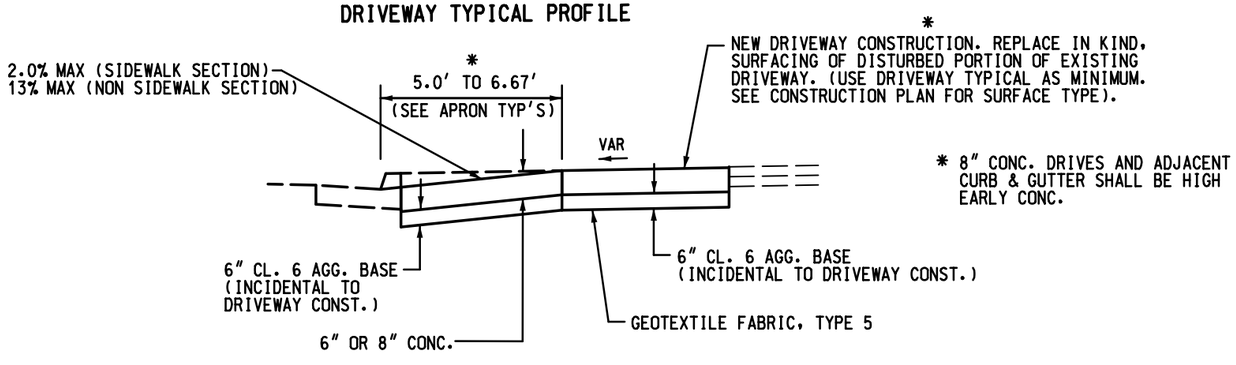
DRIVEWAY TYPICAL SECTION



(1) UNLESS NOTED OTHERWISE IN GRADING & EROSION PLAN.
(2) 6" TOPSOIL AND SEED OR SOD.
(3) SEE CONST. PLANS FOR CONC. THICKNESS & SURFACE TYPE. 4" BIT. (2360 TYPE SP 9.5 WEAR CRS (2,C) 2.0" THICK) IN 2 COURSES OR 4" CL. 6 AGGREGATE SURFACING. OR 7" BIT. (2360 TYPE SP 9.5 WEAR CRS (2,C) 2.0" THICK) IN 2 COURSES PLUS 2360 TYPE SP 12.5 NON WEAR CRS (2,B) 3" THICK) IN 1 COURSE

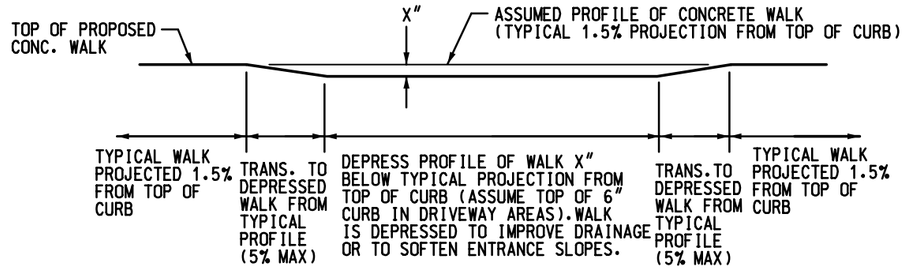
*8" CONC. DRIVES SHALL BE HIGH EARLY CONC.

DRIVEWAY TYPICAL PROFILE



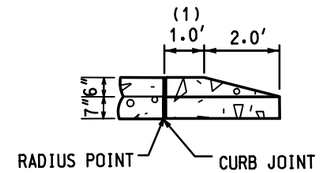
* 8" CONC. DRIVES AND ADJACENT CURB & GUTTER SHALL BE HIGH EARLY CONC.

DETAIL OF DEPRESSED WALK AREA AT DRIVEWAYS



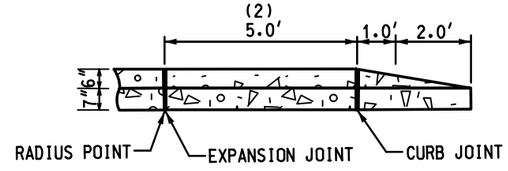
X = DIMENSION DEPICTED IN CONSTRUCTION PLANS.
"X" DIMENSION REPRESENTS DEPRESSION OF WALKWAY AREA WITHIN DRIVEWAY.

TAPERED CURB & GUTTER DETAILS



(1) APPLIES TO INTERSECTING STREETS WITHOUT CATCH BASINS AT ENDS OF RETURNS

(2) APPLIES TO INTERSECTING STREETS WITH CATCH BASINS AT ENDS OF RETURNS.



Hennepin

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.

AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

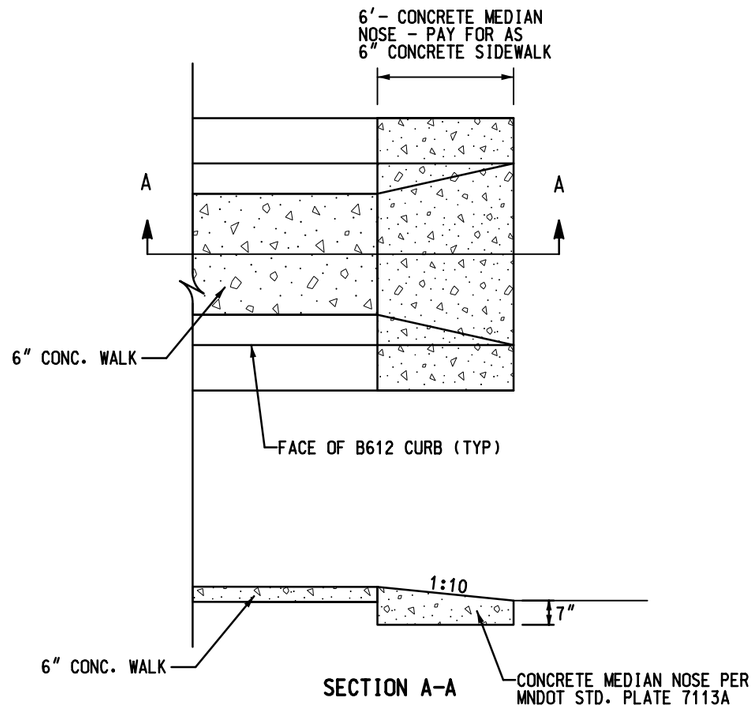
DESIGN BY:	R. MANKE
CAD BY:	R. MANKE
CHECKED BY:	S. PARK
LAST REVISION:	/ /

MISCELLANEOUS DETAILS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

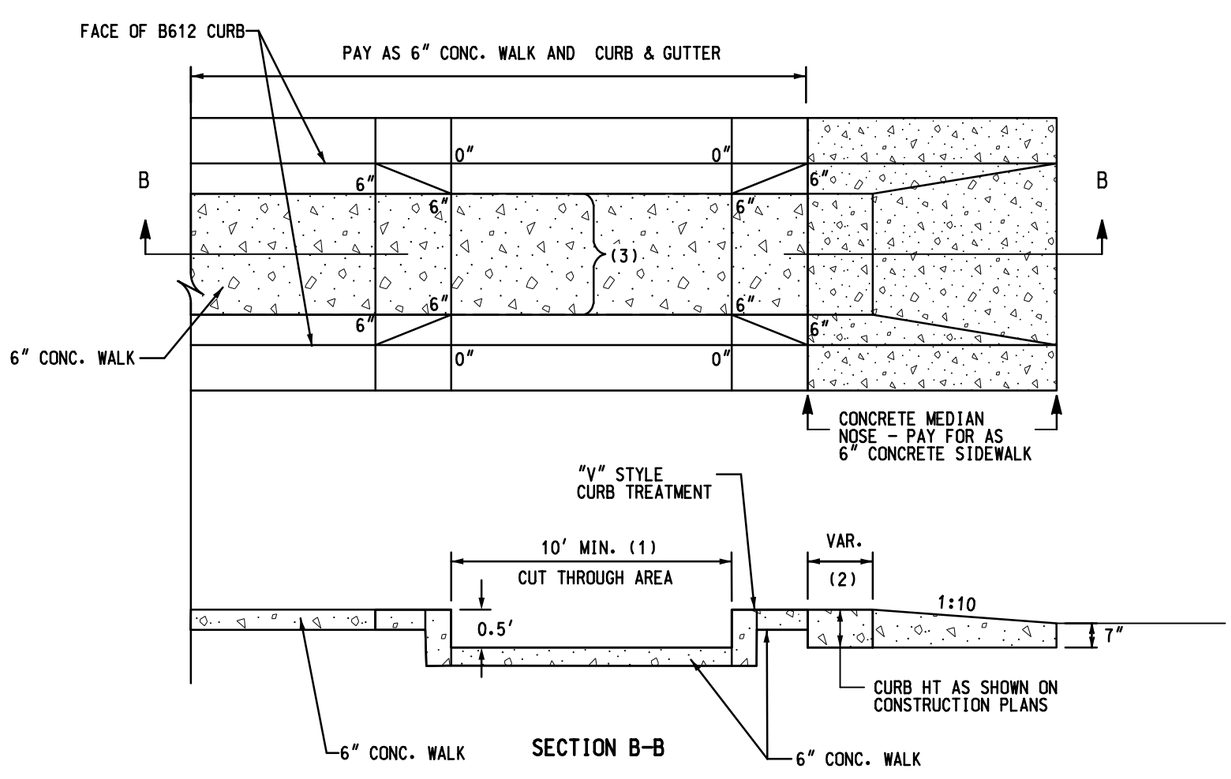
SHEET 48 / 336

CONC. MEDIAN NOSE WITHOUT CROSS WALK



SECTION A-A

CONC. MEDIAN NOSE (RAISED) WITH CUT THROUGH CROSS WALK



SECTION B-B

(1) 6′ MINIMUM OR AS DEPICTED IN CONSTRUCTION PLANS OR AS DIRECTED BY THE ENGINEER.

(2) WHEN VARIABLE DISTANCE IS GREATER THAN 6 FEET USE 1:4 TAPERS AT CUT THROUGH AREAS AND PAY VARIABLE AREA AS C&G WITH 6″ CONC. WALK.

(3) DETECTABLE WARNING SYSTEMS (TRUNCATED DOMES) WILL BE PLACED IN MEDIANS WHERE THE FACE OF CURB/FACE OF CURB WIDTH IS LARGER THAN 6′.

Hennepin

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.

AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

DESIGN BY:	R. MANKE
CAD BY:	R. MANKE
CHECKED BY:	S. PARK
LAST REVISION:	/ /

MISCELLANEOUS DETAILS

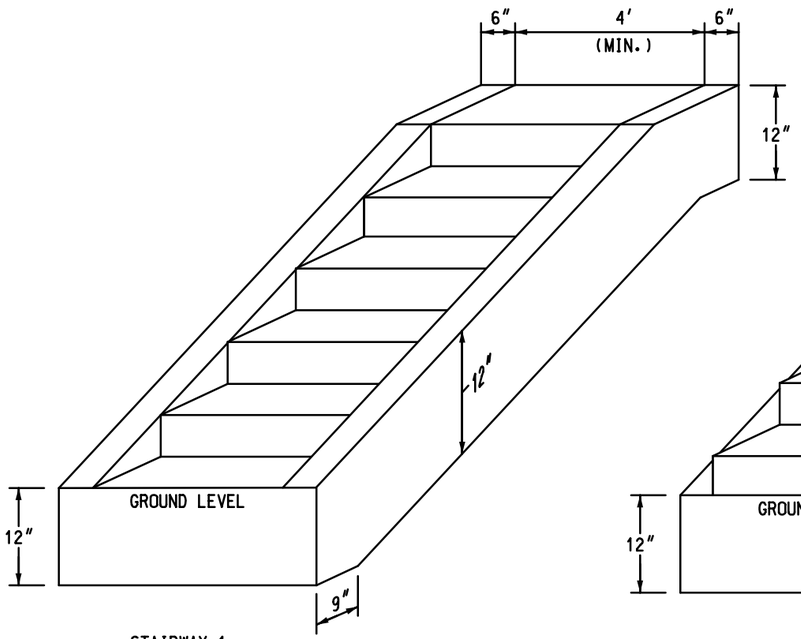
CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 49 / 336

CONCRETE STAIRWAY DETAILS

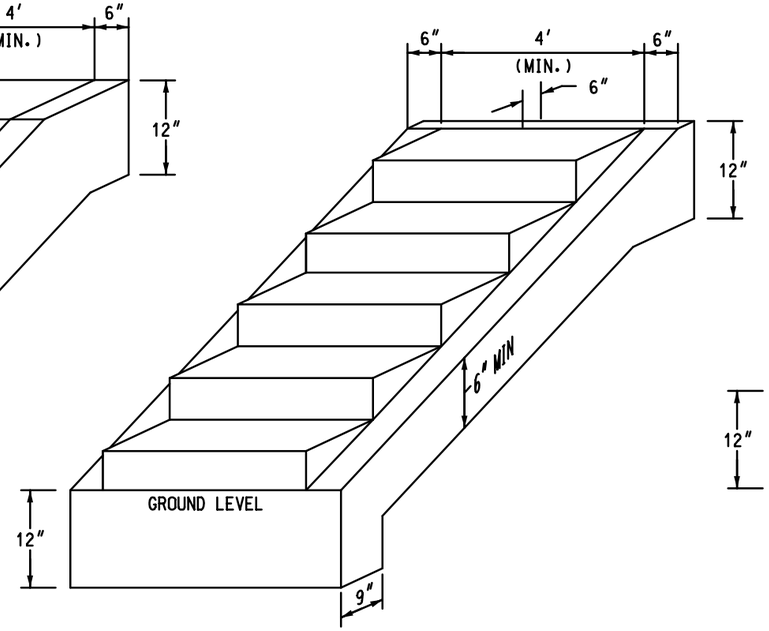
SEE STAIRWAY INFORMATION CHART ON SHEET RW1 - RW81

TYPICAL STAIRWAY WITH HIGH CONC. SIDEWALLS



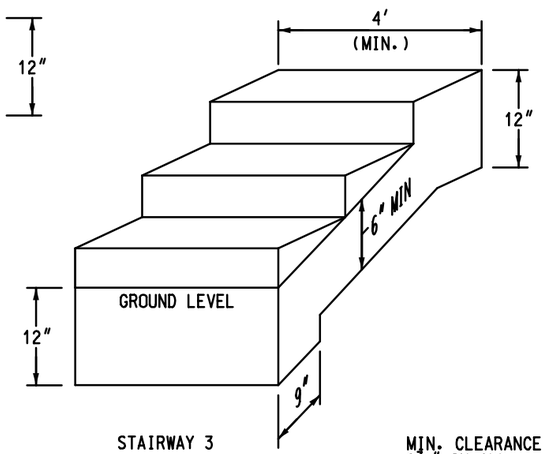
STAIRWAY 1

TYPICAL STAIRWAY WITH LOW CONC. SIDEWALLS



STAIRWAY 2

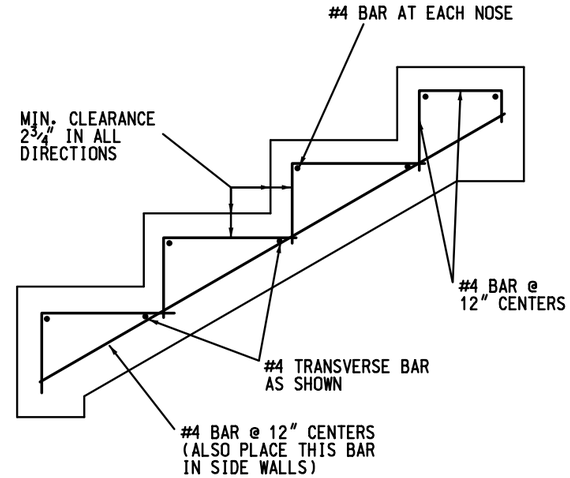
TYPICAL STAIRWAY WITH NO CONC. SIDEWALLS



STAIRWAY 3

NOTES: 1. TREAD AND RISER DIMENSIONS MAY BE FIELD ADJUSTED BY ENGINEER. BUILDING CODE TREAD DIMENSION IS 11" MINIMUM. RISER DIMENSION IS 4" TO 7". STEPS SHALL BE UNIFORM FOR EACH STAIRWAY. RISER HEIGHTS SHALL NOT VARY MORE THAN 3/8" IN HEIGHT FOR EACH STAIRWAY.

2. CONSTRUCT STEPS LIN FT IS BASED ON 4' WIDTH/STEP FOR TYPE 3 AND 5' WIDTH/STEP FOR TYPE 1 & 2.



REINFORCEMENT FOR CONCRETE STEPS

(NOT TO SCALE)

NOTES:
ALL BARS ARE EPOXY COATED.
F & I STEEL REINFORCEMENT (INCIDENTAL)

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

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CAD BY:	R. MANKE
CHECKED BY:	S. PARK
LAST REVISION:	/ /

MISCELLANEOUS DETAILS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

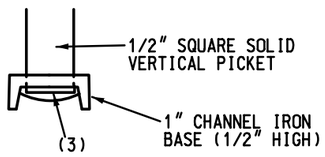
SHEET 50 / 336

ORNAMENTAL HANDRAIL (EXTERIOR)

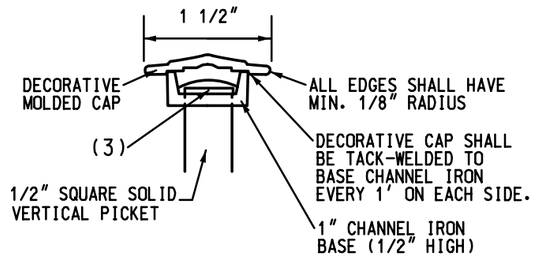
PLACE RAILING 3″ FROM EDGE OF STEPS
CONCRETE STAIRWAY INFORMATION SHOWN ON SHEET RW1.

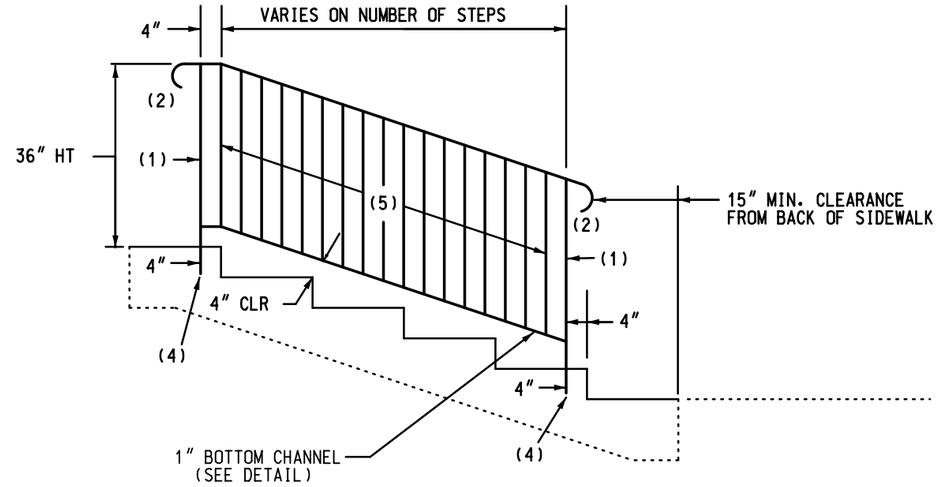
METAL RAILING NOTES AND DETAILS
(NOTE: DETAILS NOT TO SCALE)

BASE RAIL DETAIL



CAP RAIL DETAIL





NOTES:

(1) 1″ SQUARE SOLID POST.

(2) 4″ CURLED RETURN (MOLDED CAP ONLY – END CHANNEL BASE PORTION OF TOP RAIL AT POST).

(3) PUNCH CHANNEL IRON, INSERT VERTICAL PICKETS AND BUTT-WELD TO INSIDE OF CHANNEL IRON.

(4) LOCATE 3″ FROM EDGE OF STAIRWAY (CENTER OF CONCRETE SIDEWALL, EXCEPT FOR STAIRWAYS WITHOUT SIDEWALLS, WHICH ARE LOCATED ON THE STAIR TREAD 3″ FROM EDGE OF TREAD). DRILL FOR 4″ EMBEDMENT, FILL VOID WITH NON-SHRINK GROUT.

(5) SOLID SQUARE PICKETS ON 4″ CENTERS.

SEE SPECIAL PROVISIONS FOR INFORMATION
REGARDING MATERIAL & COATING REQUIREMENTS

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER — 49073 LICENSE NO. — / / DATE

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LAST REVISION:	/ /

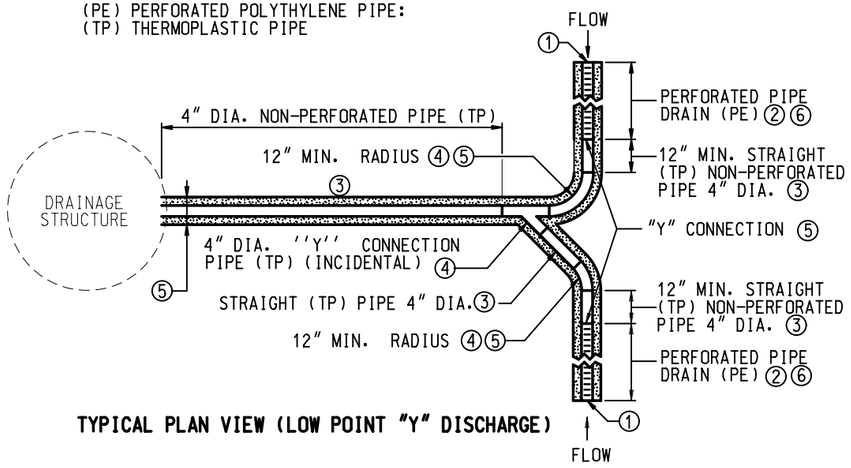
MISCELLANEOUS DETAILS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

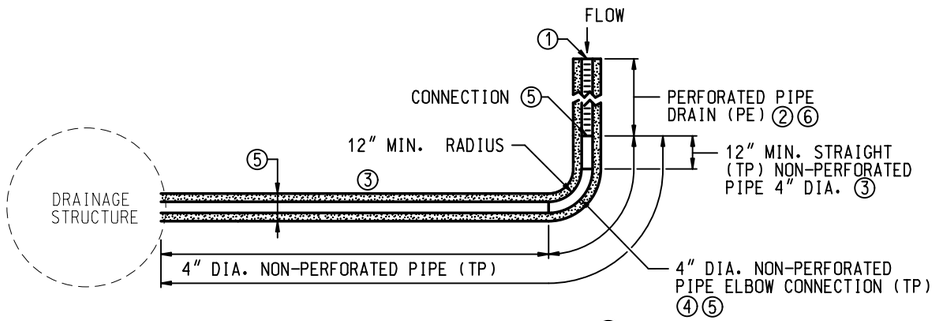
SHEET 51 / 336

PERFORATED PIPE DETAIL

(PE) PERFORATED POLYTHYLENE PIPE:
(TP) THERMOPLASTIC PIPE



TYPICAL PLAN VIEW (LOW POINT "Y" DISCHARGE)



TYPICAL PLAN VIEW (SINGLE DISCHARGE) ⑤

NOTES FOR SUBSURFACE DRAINS:

① THE UPSTREAM ENDS OF THE PERFORATED PIPE SHALL BE CAPPED AS APPROVED BY THE PROJECT ENGINEER, AND CAPS SHALL BE INCIDENTAL.

② MAXIMUM LENGTH 500′, EXCEPT 300′ MAXIMUM FOR GRADES LESS THAN 0.2%. LENGTH INCLUDED AND PAID FOR AS ITEM 2502.503, 4" PERF PE PIPE DRAIN.

③ LENGTH INCLUDED AND PAID FOR AS ITEM 2502.503, 4" PERF PE PIPE DRAIN.

④ DETAILS OF CONNECTION AND COUPLING TO PE PIPE TO BE APPROVED BY THE ENGINEER. PAYMENT FOR ''Y'' AND EXTRA CONNECTION, 12" RADIUS TP PIPE AND COUPLING TO BE INCIDENTAL.

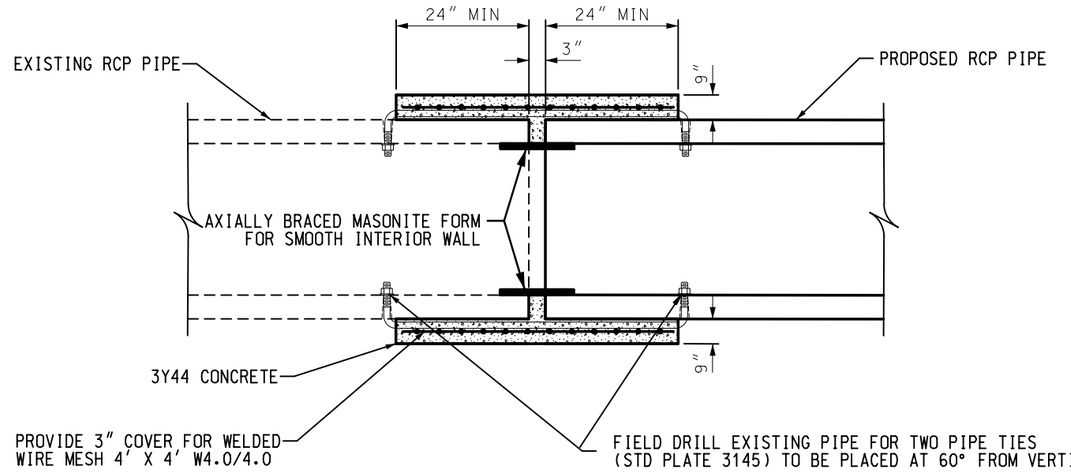
⑤ SEE SPECIAL PROVISIONS FOR MATERIAL AND CONSTRUCTION DETAILS.

⑥ 4" DIAMETER.

CONNECTIONS OF SUBSURFACE DRAINS INTO STRUCTURES SHALL BE CONSIDERED INCIDENTAL AND SHALL BE PROPERLY GROUTED AROUND PIPE TO CREATE A WATERTIGHT SEAL.

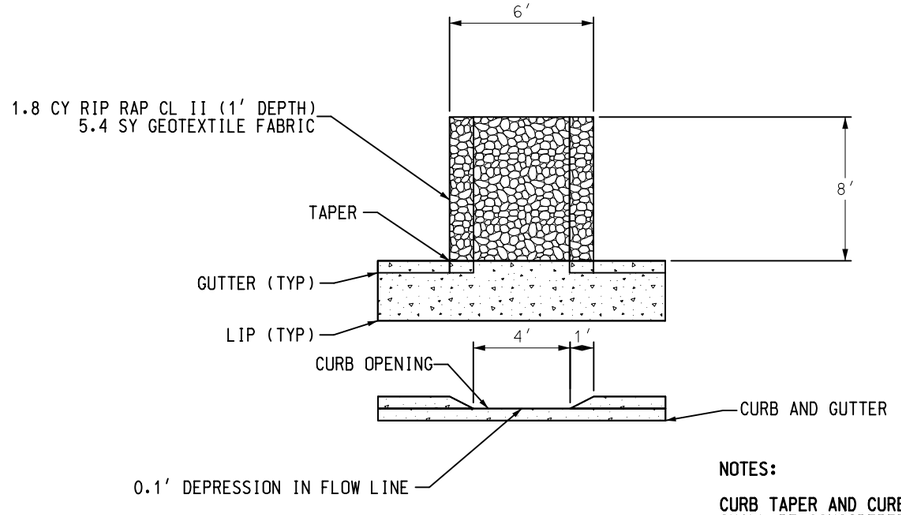
CONSTRUCTION JOINT FOR CONNECT TO EXISTING STORM SEWER

NOT TO SCALE



CURB CUT

NOT TO SCALE



NOTES:

CURB TAPER AND CURB OPENING SHALL BE CONSIDERED INCIDENTAL TO THE ASSOCIATED CURB AND GUTTER PAY ITEM.

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER — 49073 LICENSE NO. — / / DATE

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CHECKED BY:	S. PARK
LAST REVISION:	/ /

MISCELLANEOUS DETAILS

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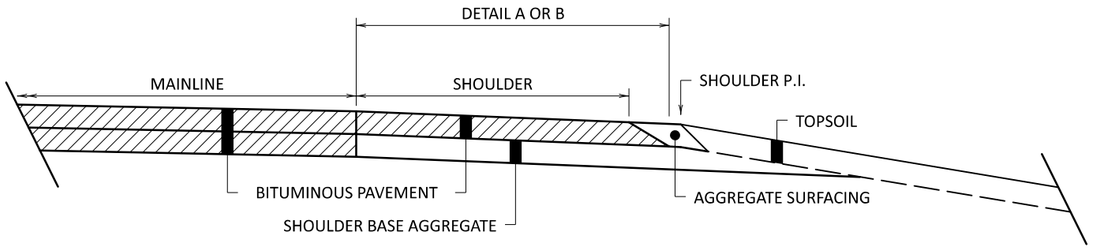
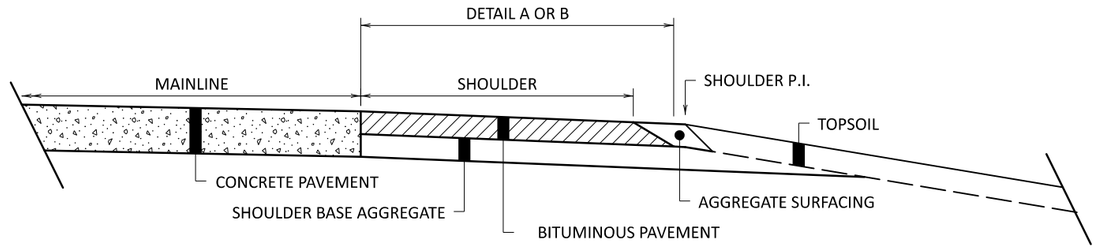
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

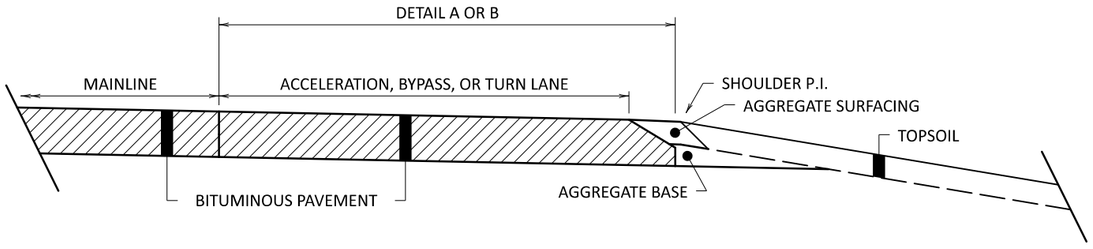
SHEET 52 / 336



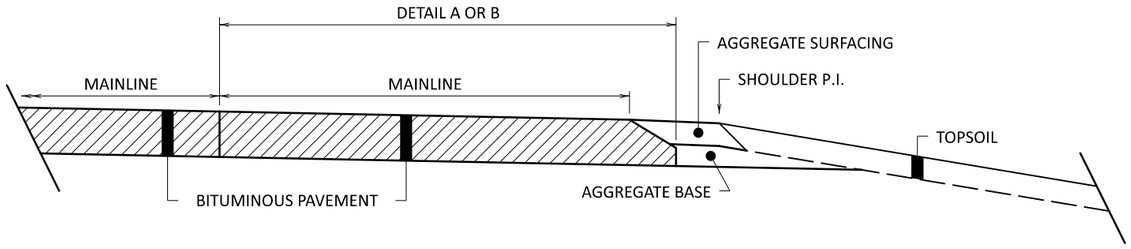
BITUMINOUS PAVEMENT WITH BITUMINOUS SHOULDERS (8' OR LESS)



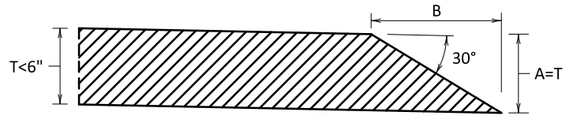
CONCRETE PAVEMENT WITH BITUMINOUS SHOULDERS (8' OR LESS)



BITUMINOUS PAVEMENT WITH ACCELERATION LANES, BYPASS LANES OR TURN LANES

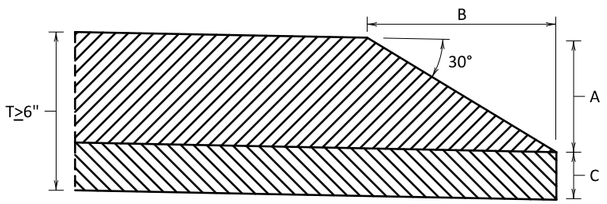


BITUMINOUS PAVEMENT WITH AGGREGATE SHOULDERING



DETAIL A
PAVEMENT THICKNESS <6"

FOR BITUMINOUS PAVEMENT THICKNESS < 6"	
PAVEMENT THICKNESS, T	B
2"	3.5"
3"	5.2"
4"	6.9"
5"	8.7"



DETAIL B
PAVEMENT THICKNESS ≥ 6"

FOR BITUMINOUS PAVEMENT THICKNESS ≥ 6"			
PAVEMENT THICKNESS, T	A	B	C
6"	5"	8.7"	1"
8"	5"	8.7"	3"
10"	5"	8.7"	5"
12"	5"	8.7"	7"

NOTES:

CONSTRUCT THE SAFETY EDGE ALONG ALL BITUMINOUS PAVEMENT EDGES ADJACENT TO AGGREGATE SURFACING. THIS INCLUDES:
- MAINLINE ROADWAYS
- SHOULDERS 8' WIDE OR LESS
- RAMPS AND LOOPS
- ACCELERATION, BYPASS AND TURN TURN LANES

CONSTRUCT THE SAFETY EDGE USING A MANUFACTURED SHOE DEVICE ATTACHED TO THE PAVING MACHINE. A SINGLE-PLATE STRIKE-OFF METHOD IS NOT ALLOWED.

PROVIDE THE SAFETY EDGE ALONG THE ROADWAY THROUGH UNPAVED ENTRANCES SUCH AS FARM ACCESSES, UNPAVED DRIVEWAYS, AND GRAVEL ROAD ACCESSES. FOR PAVED PUBLIC ENTRANCES AND PAVED DRIVEWAYS, STOP THE SAFETY EDGE AND MATCH THE PROPOSED CONSTRUCTED PAVEMENT TO THE EXISTING CONDITIONS OR FOLLOW THE DESIGN PLANS. SHORT SECTIONS OF HANDWORK MAY BE NECESSARY FOR TRANSITIONS AND TURNOUTS.

SAFETY EDGE IS OPTIONAL FOR PAVED SHOULDER WIDTHS GREATER THAN 8'.

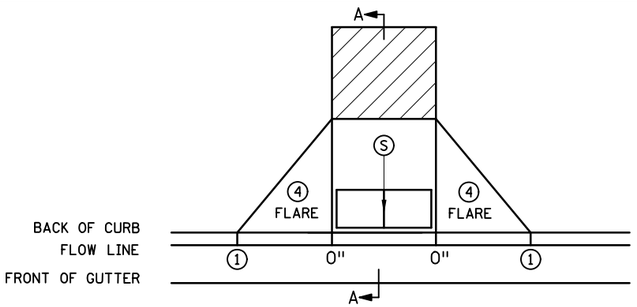
SEE TYPICAL SECTIONS FOR SAFETY EDGE PLACEMENT LOCATIONS.

THE SAFETY EDGE IS ADDED TO THE OUTSIDE OF THE REQUIRED BITUMINOUS TOP SURFACE WIDTH SHOWN IN THE PLANS.

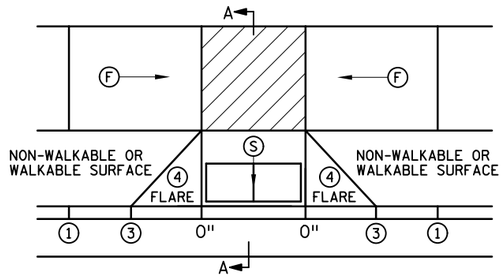
PLOTTED/REVISED: 9/30/2025
MODEL NAME SHEET_04
USER NAME CHCU001
PATH & FILENAME: C:\Users\CHCU001\Hennepin County\Hennepin County Transportation Design - HC_Projects\051_1820\Design\Plans\1820_Standard Plan Sheets.dgn

LEAD EXPERT OFFICE	CURT TURGEON DIRECTOR OFFICE OF MATERIALS & ROAD RESEARCH		SAFETY EDGE BITUMINOUS PAVEMENT	APPROVED: 02-21-2024 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.220	2 OF 2

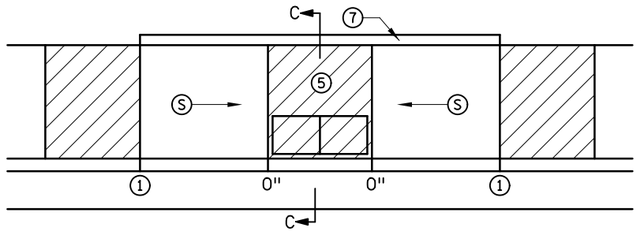
DEPARTMENT OF TRANSPORTATION		STANDARD PLAN	SAP 027-651-011, SAP 027-619-029 SAP 027-594-005	SHEET NO.	53
			CSAH 51	TOTAL SHEETS	336



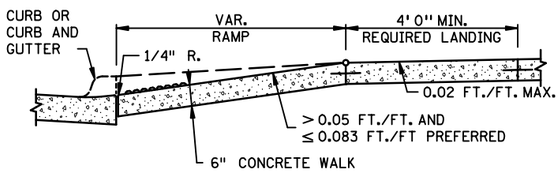
PERPENDICULAR



TIERED PERPENDICULAR

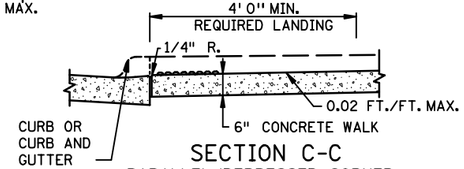


PARALLEL



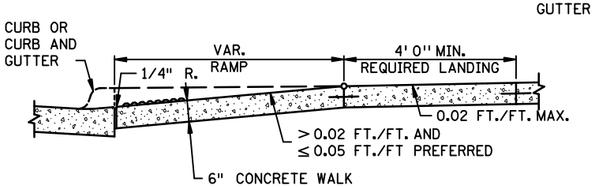
SECTION A-A

PERPENDICULAR/TIERED/DIAGONAL



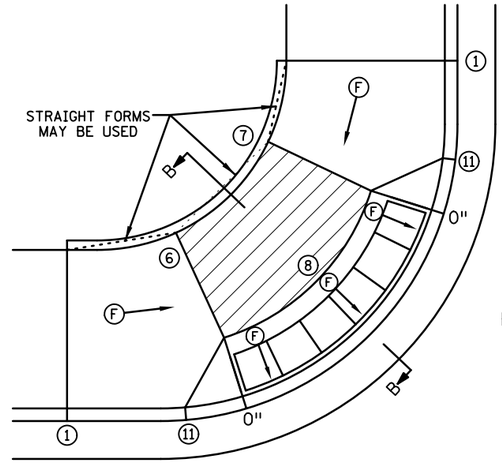
SECTION C-C

PARALLEL/DEPRESSED CORNER

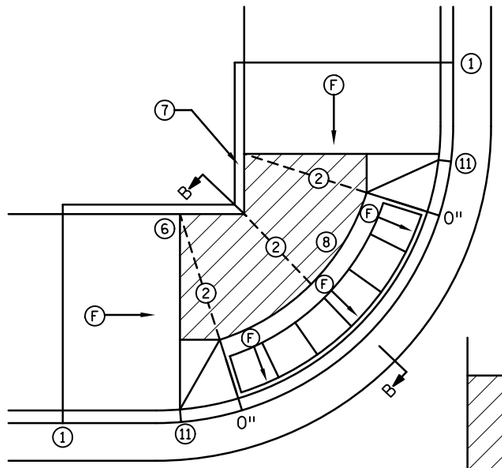


SECTION B-B

FAN

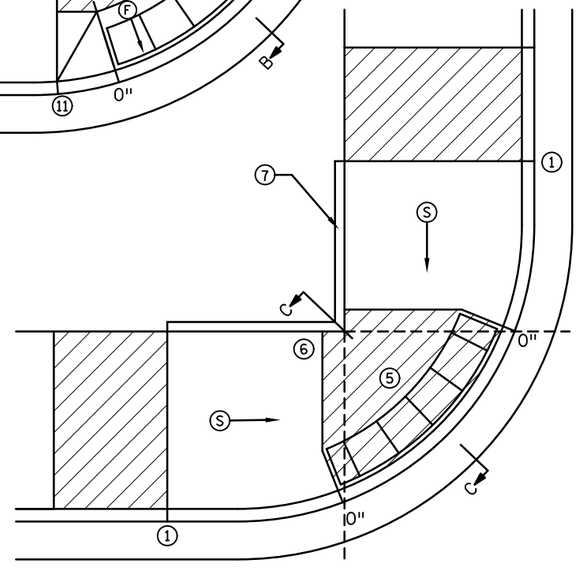


FAN ⑩

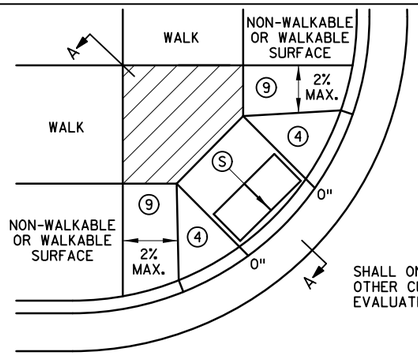


MODIFIED FAN ⑩

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 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 SHEET 6 OF 6 FOR ALL SEPARATELY POURED INITIAL LANDINGS.

WHEN SIDEWALK IS AT BACK OF CURB, TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

MAINTAIN POSITIVE BOULEVARD DRAINAGE TO TOP OF CURB.

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 THE ENTIRE PAR WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK WITH THE EXCEPTION OF 3" MAXIMUM ON EACH OUTSIDE EDGE WHICH ENSURES THE DETECTABLE WARNINGS ARE ENCASED IN CONCRETE WHEN ADJACENT TO TURF. WHEN ADJACENT TO CONCRETE FLARES 0" - 3" OFFSET IS ALLOWED.

WHEN DESIGNING OR ORDERING RECTANGULAR DETECTABLE WARNING SURFACES SHOULD BE 6" LESS THAN THE INCOMING PAR. ARC LENGTH OF THE 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.

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 LESS THAN 5% RUNNING SLOPE SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.

⑧ A 7' MIN TOP RADIUS GRADE BREAK IS 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.

⑪ INTERMEDIATE CURB HEIGHTS TAPER SHALL RISE AT 8-10% TO A MINIMUM 3" CURB HEIGHT. REDUCE INTERMEDIATE CURB HEIGHT TO 2+ INCHES IF NECESSARY TO MATCH ADJACENT BOULEVARD OR SIDEWALK GRADES.

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 PARS.

X" — CURB HEIGHT

LEAD EXPERT OFFICE	JEFFREY PERKINS OPERATIONS DIVISION	PEDESTRIAN CURB RAMP DETAILS	APPROVED: 11-04-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.250	1 OF 6
DEPARTMENT OF TRANSPORTATION		STANDARD PLAN	SAP 027-651-011, SAP 027-619-029 SAP 027-594-005	SHEET NO.	54	
			CSAH 51	TOTAL SHEETS	336	

PLOTTED/REVISED: 9/30/2025
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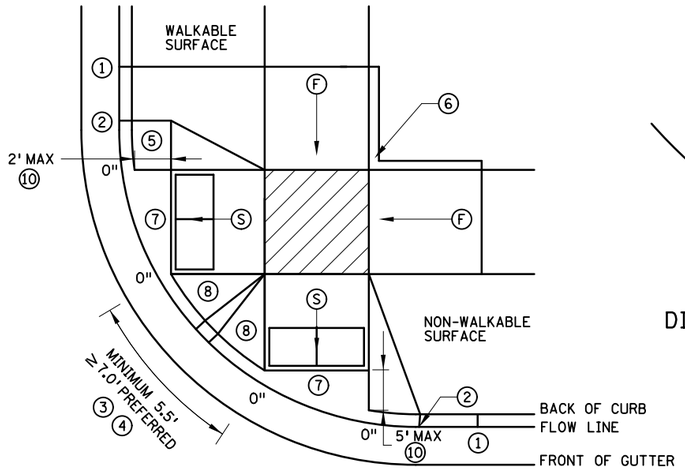
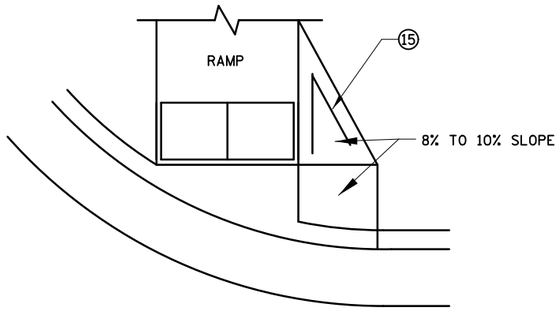
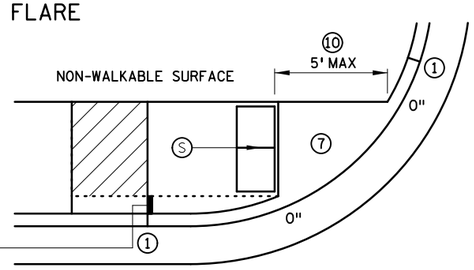


COMBINED DIRECTIONAL

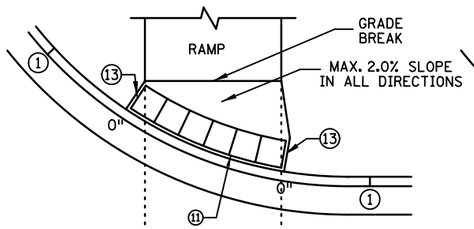


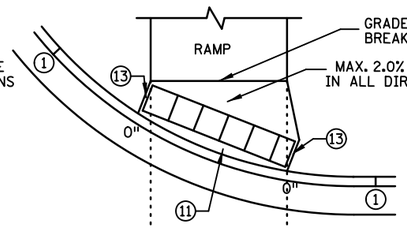
DIRECTIONAL RAMP WALKABLE FLARE

IF NON-CONCRETE BLVD. IS CONSTRUCTED AND IS LESS THAN 2' IN WIDTH AT TOP OF CURB TRANSITION, PAVE CONCRETE RAMP WIDTH TO ADJACENT BACK OF CURB.



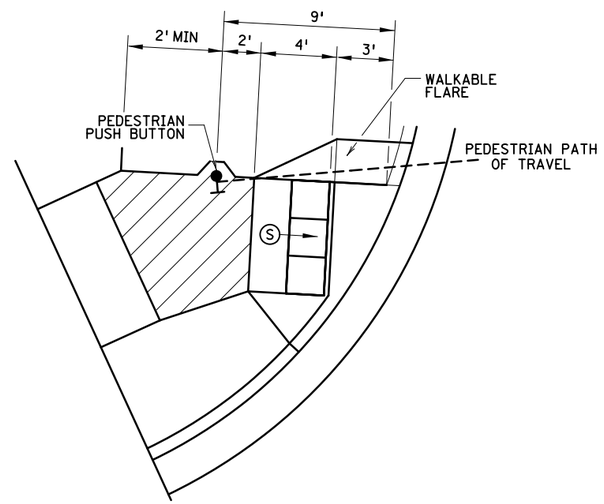
STANDARD ONE-WAY DIRECTIONAL ⑨





DETECTABLE WARNING PLACEMENT WHEN SETBACK CRITERIA IS EXCEEDED ⑫

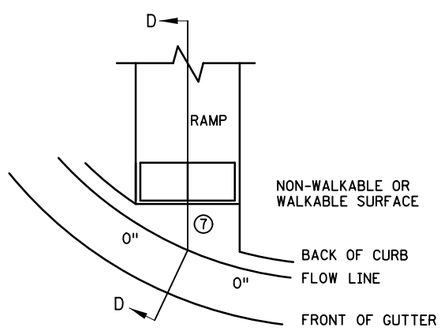
ONE-WAY DIRECTIONAL WITH DETECTABLE WARNING AT BACK OF CURB

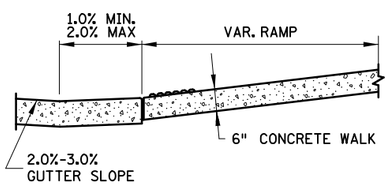


SEMI-DIRECTIONAL RAMP ③④⑨

3' DOME SETBACK, 4' LONG RAMP AND PUSH BUTTON 9' FROM THE BACK OF CURB

PRIMARILY USED FOR APS APPLICATIONS WHERE THE PAR DOES NOT CONTINUE PAST THE PUSH BUTTON (DEAD-END SIDEWALK)





SECTION D-D

CURB FOR DIRECTIONAL RAMPS ⑭

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 THE ENTIRE PAR WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK WITH THE EXCEPTION OF 3" MAXIMUM ON EACH OUTSIDE EDGE WHICH ENSURES THE DETECTABLE WARNINGS ARE ENCASED IN CONCRETE WHEN ADJACENT TO TURF. WHEN ADJACENT TO CONCRETE FLARES 0" - 3" OFFSET IS ALLOWED.

WHEN DESIGNING OR ORDERING RECTANGULAR DETECTABLE WARNING SURFACES SHOULD BE 6" LESS THAN THE INCOMING PAR. ARC LENGTH OF THE 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 SHALL 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.

⑮ PLACE 2 NO. 4 BARS 4 INCHES FROM SIDE OF FORMS WITH A MINIMUM 2 INCHES OF CONCRETE COVER ALONG EACH SIDE OF FLARE (INCIDENTAL).

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 PARS.

X" CURB HEIGHT

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LEAD EXPERT OFFICE: JEFFREY PERKINS, OPERATIONS DIVISION		PEDESTRIAN CURB RAMP DETAILS	APPROVED: 11-04-2021 REVISED:	THOMAS STYRBICKI, STATE DESIGN ENGINEER	STANDARD PLAN 5-297.250	2 OF 6
DEPARTMENT OF TRANSPORTATION		STANDARD PLAN	SAP 027-651-011, SAP 027-619-029, SAP 027-594-005	SHEET NO.	55	
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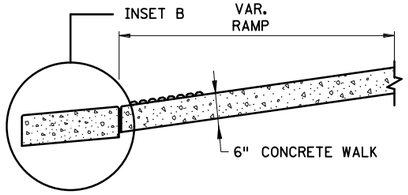
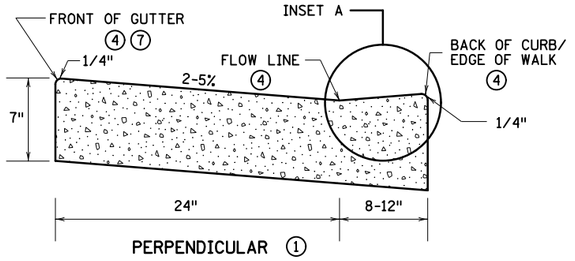
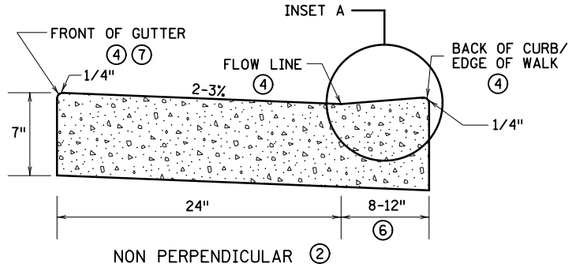
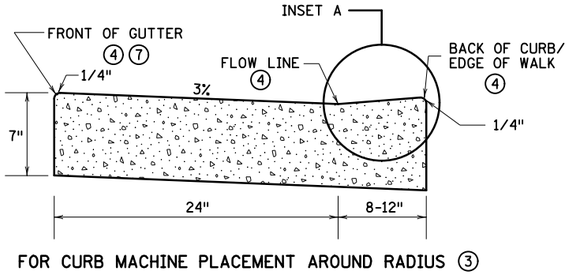




PERPENDICULAR ①

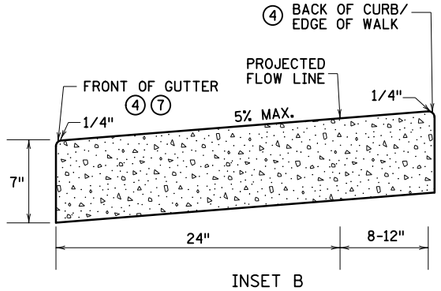


NON PERPENDICULAR ②

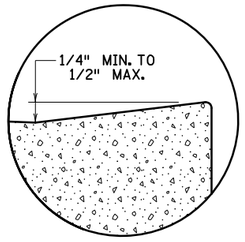


FOR CURB MACHINE PLACEMENT AROUND RADIUS ③
(REGARDLESS OF RAMP TYPE)

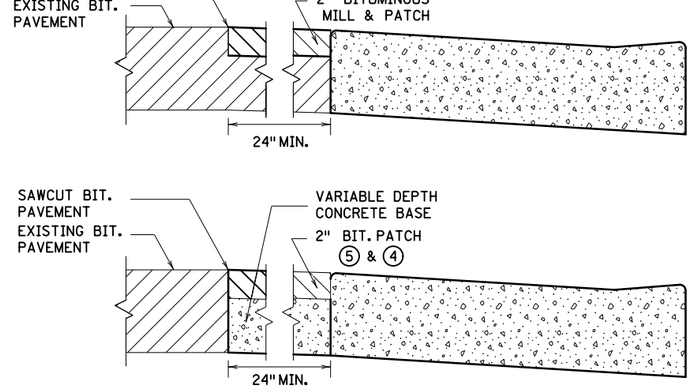
PEDESTRIAN ACCESS ROUTE CURB & GUTTER DETAIL



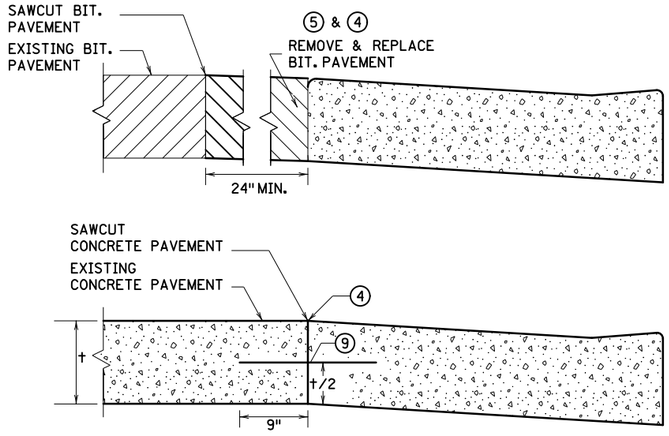
INSET B
OUTFLOW GUTTER ⑧



INSET A

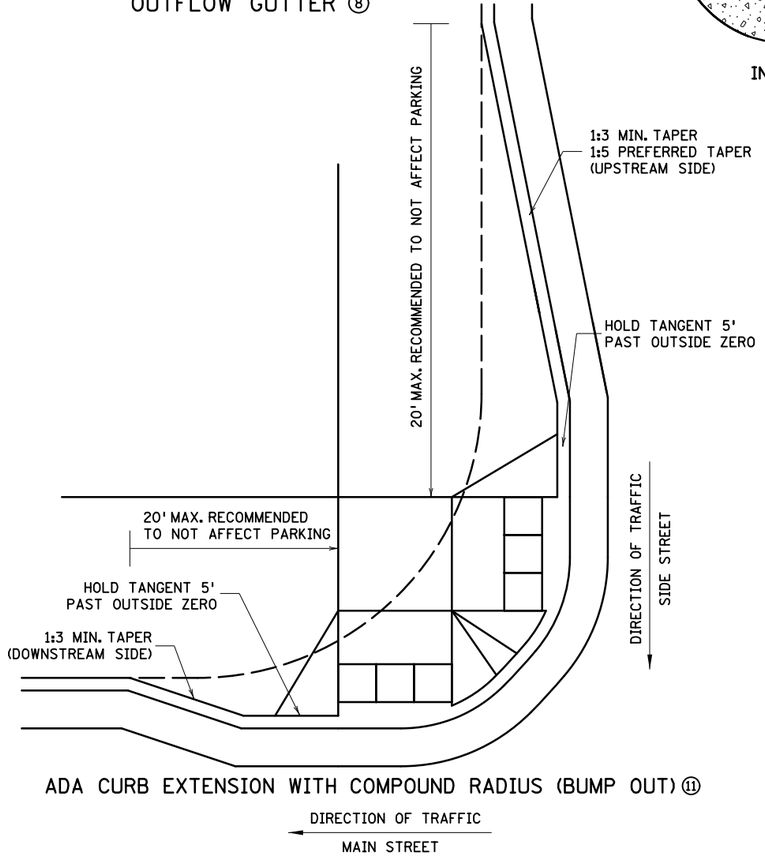


ONLY ALLOWED PER ENGINEER'S APPROVAL

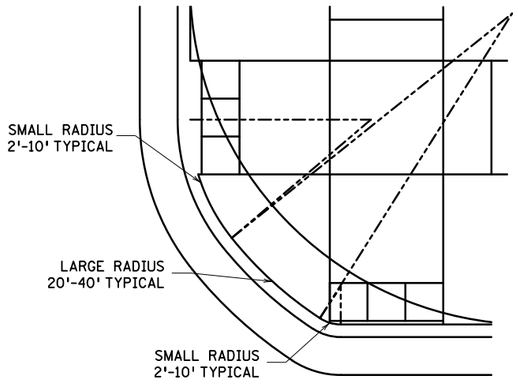


PAVEMENT TREATMENT OPTIONS IN FRONT OF CURB & GUTTER

FOR USE ON CURB RAMP RETROFITS



ADA CURB EXTENSION WITH COMPOUND RADIUS (BUMP OUT) ⑪



COMBINED DIRECTIONAL ⑩
(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.

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LEAD EXPERT OFFICE: JEFFREY PERKINS, OPERATIONS DIVISION		PEDESTRIAN CURB RAMP DETAILS	APPROVED: 11-04-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.250	3 OF 6
DEPARTMENT OF TRANSPORTATION		STANDARD PLAN	SAP 027-651-011, SAP 027-619-029 SAP 027-594-005	SHEET NO.	56	
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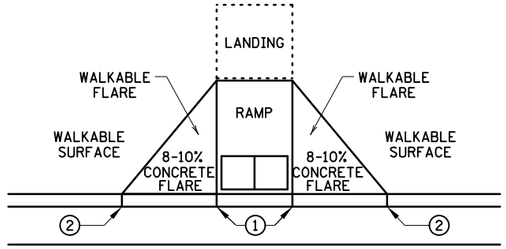
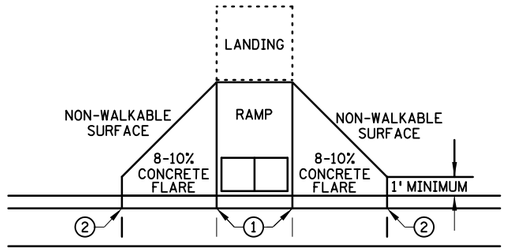
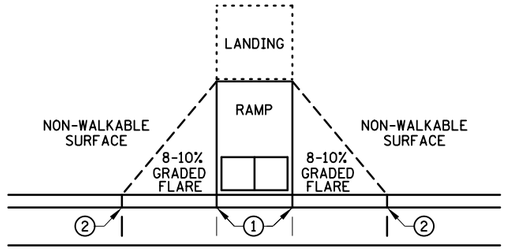


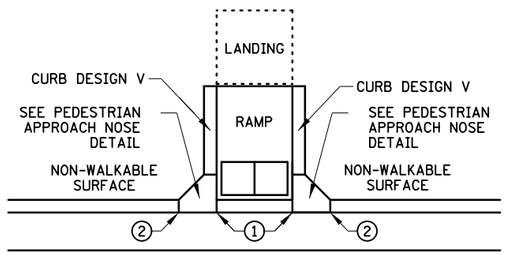
PAVED FLARES
ADJACENT TO WALKABLE SURFACE



PAVED FLARES
ADJACENT TO NON-WALKABLE SURFACE

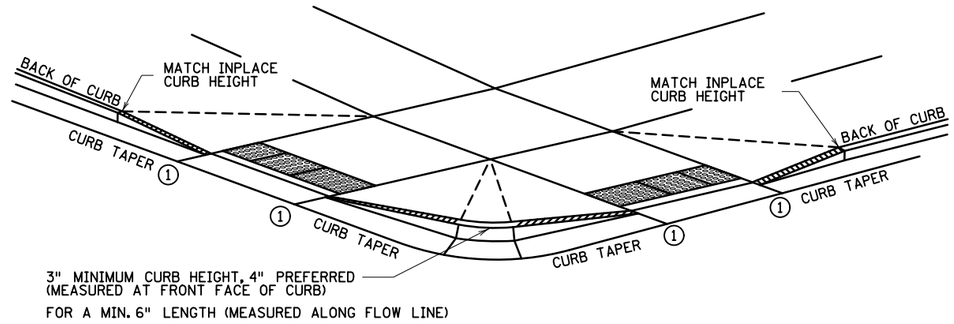


GRADED FLARES

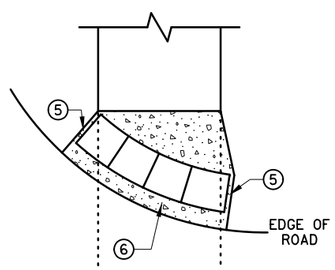


RETURNED CURB ④

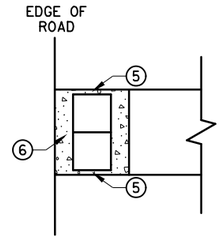
TYPICAL SIDE TREATMENT OPTIONS ③ ⑩



DETECTABLE EDGE WITH ⑦
CURB AND GUTTER

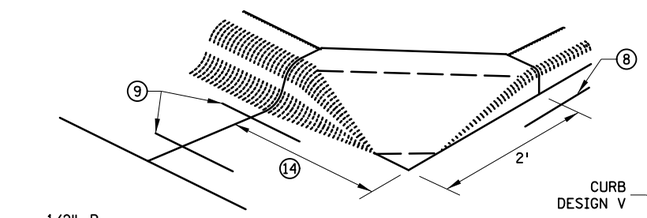


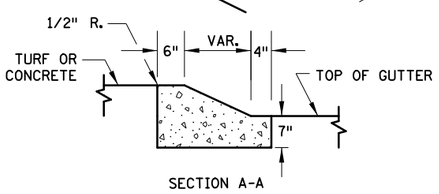
RADIAL DETECTABLE WARNING



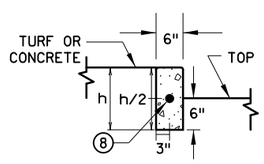
RECTANGULAR DETECTABLE WARNING

DETECTABLE EDGE WITHOUT CURB AND GUTTER

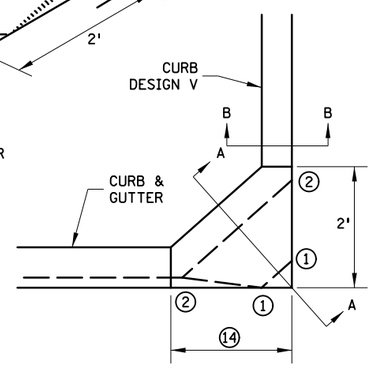




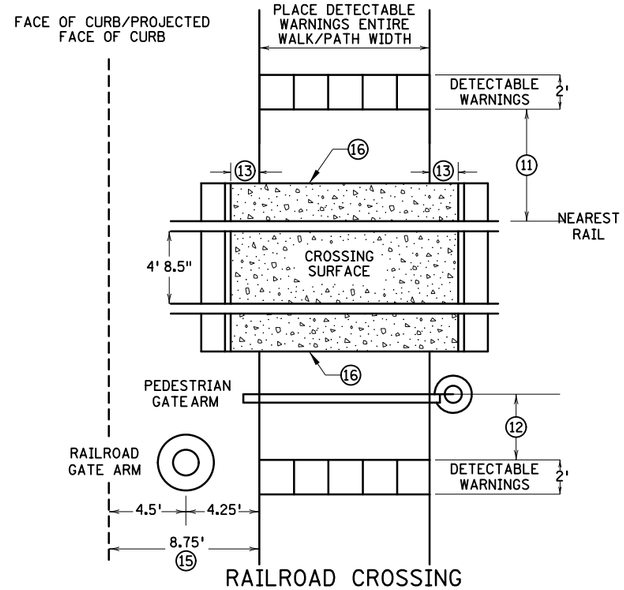
SECTION A-A



SECTION B-B



PEDESTRIAN APPROACH
NOSE DETAIL
(FOR RETURNED CURB
SIDE TREATMENT)



RAILROAD CROSSING
PLAN VIEW

NOTES:

INTERMEDIATE CURB HEIGHTS TAPER SHALL RISE AT 8-10% TO A MINIMUM 3 INCH CURB HEIGHT. INCREASE CURB TAPER LENGTH AT LESS THAN 8% OR REDUCE INTERMEDIATE CURB HEIGHT TO 2+ INCHES IF NECESSARY TO MATCH ADJACENT BOULEVARD OR SIDEWALK GRADES.

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 RAMPS FROM THE BACK OF CURB.

① 0" CURB HEIGHT. SEE INSET A ON SHEET 3 OF 6.

② FULL CURB HEIGHT.

③ 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.

④ TYPICALLY USED FOR MEDIANS AND ISLANDS.

⑤ 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.

⑥ 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.

⑦ 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.

⑧ 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.

⑨ 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.

⑩ 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. CONSTRUCT THESE TAPERS AT 0"-3" AT 8-10%, THEN LESS THAN 5% FROM 3" CURB TO FULL CURB HEIGHT.

⑪ 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.

⑫ 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 ⑪.

⑬ CROSSING SURFACE SHALL EXTEND 2' MINIMUM PAST THE OUTSIDE EDGE OF WALK OR SHARED-USE PATH.

⑭ 3' FOR MEDIANS AND SPLITTER ISLANDS. NOSE CAN BE REDUCED TO 2' ON FREE RIGHT ISLANDS.

⑮ 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.

⑯ CONSTRUCT WITH EXPANSION MATERIAL PER MNDOT SPECIFICATION 3702 TYPES A-E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE.

LEAD EXPERT OFFICE: JEFFREY PERKINS, OPERATIONS DIVISION		PEDESTRIAN CURB RAMP DETAILS	APPROVED: 11-04-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.250	4 OF 6
DEPARTMENT OF TRANSPORTATION		STANDARD PLAN	SAP 027-651-011, SAP 027-619-029 SAP 027-594-005		SHEET NO.	57
			CSAH 51		TOTAL SHEETS	336

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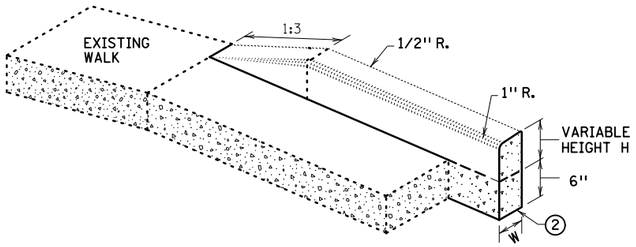
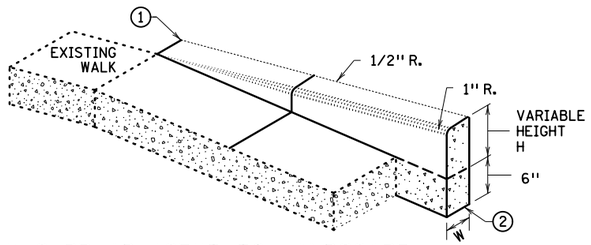
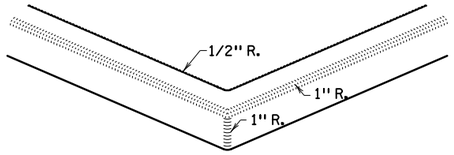


V CURB ADJACENT TO LANDSCAPE
CURB WITHIN SIDEWALK LIMITS

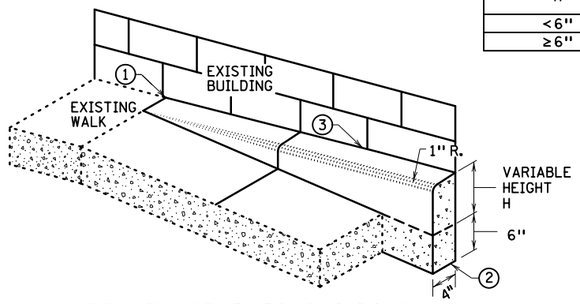


V CURB ADJACENT TO LANDSCAPE
CURB OUTSIDE SIDEWALK LIMITS

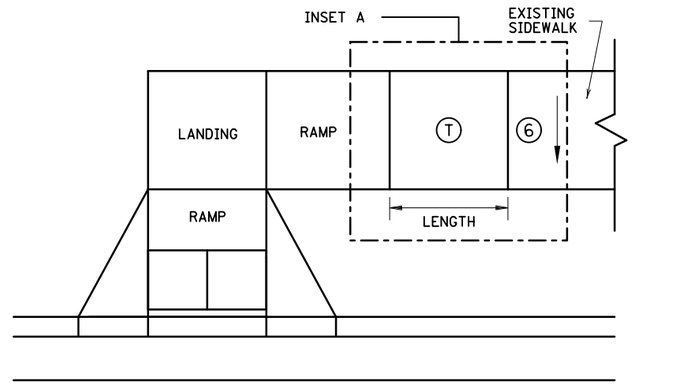


V CURB INTERSECTION

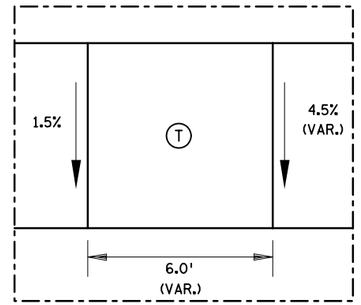
CONCRETE CURB DESIGN V	
CURB HEIGHT H	CURB WIDTH W
< 6"	4"
≥ 6"	6"



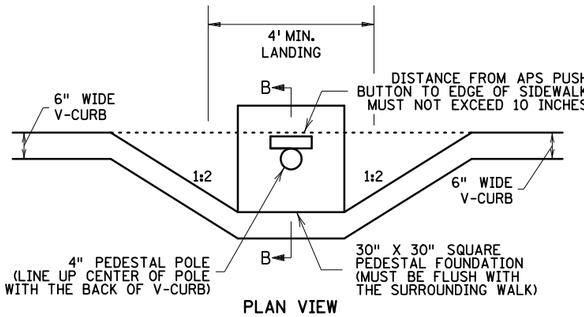
V CURB ADJACENT TO BUILDING OR BARRIER



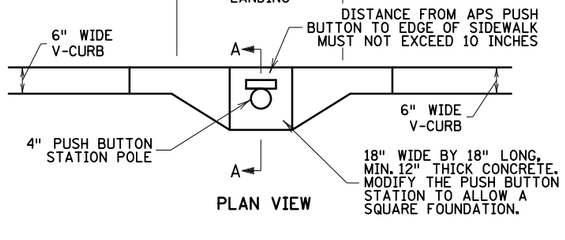
TRANSITION PANEL ④⑤



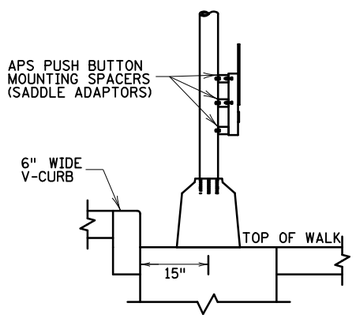
INSET A



PLAN VIEW

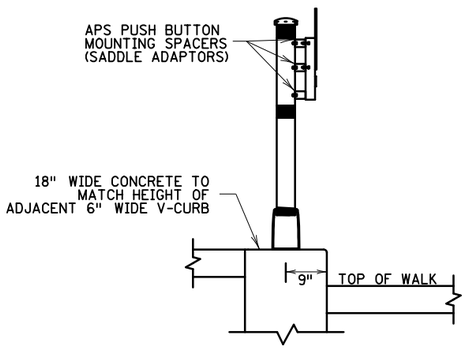


PLAN VIEW



SECTION B-B

SIGNAL PEDESTAL & PUSH BUTTON (V-CURB)



SECTION A-A

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 CONSTRUCT USING APPROVED EXPANSION MATERIAL PER MNDOT TYPE A-E EXPANSION. LEAVE A MINIMUM ½" TOP GAP AND SEAL WITH MNDOT APPROVED SILICONE PER MNDOT SPEC 3722.

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

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%.

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.

Ⓣ 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.

LEAD EXPERT OFFICE	JEFFREY PERKINS OPERATIONS DIVISION		PEDESTRIAN CURB RAMP DETAILS	APPROVED: 11-04-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.250	5 OF 6
	DEPARTMENT OF TRANSPORTATION		STANDARD PLAN	SAP 027-651-011, SAP 027-619-029 SAP 027-594-005		SHEET NO.	58
				CSAH 51		TOTAL SHEETS	336

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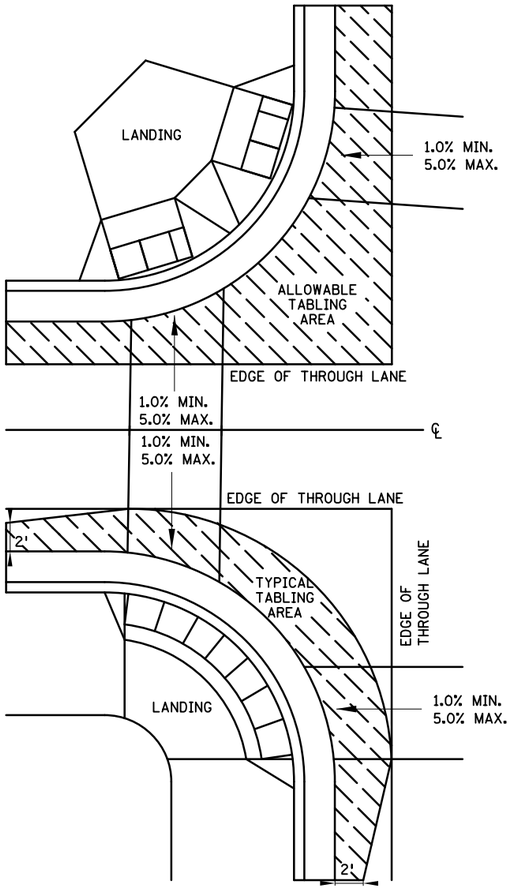
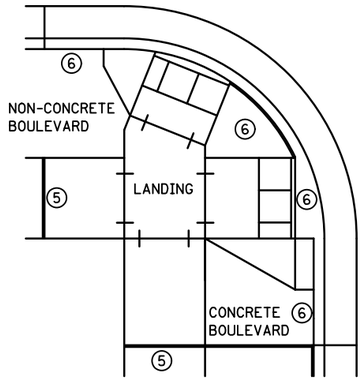
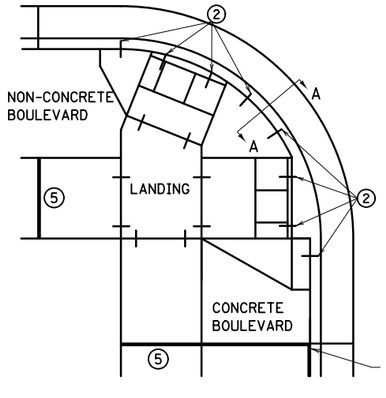


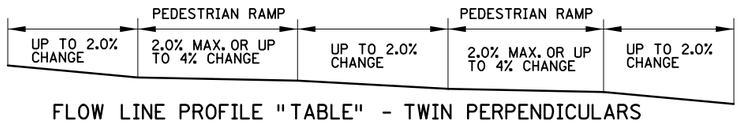
CURB LINE AND ROAD CROSSING ADJUSTMENTS



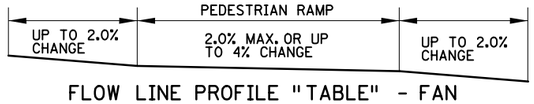
EXPANSION MATERIAL PLACEMENT
FOR CONCRETE ROADWAYS



CURB LINE REINFORCEMENT ④
PLACEMENT ON BITUMINOUS ROADWAYS



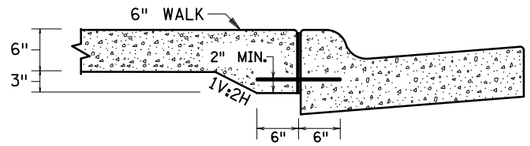
FLOW LINE PROFILE "TABLE" - TWIN PERPENDICULARS



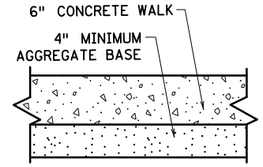
FLOW LINE PROFILE "TABLE" - FAN

FLOW LINE PROFILE RAISE - TWIN PERPENDICULARS

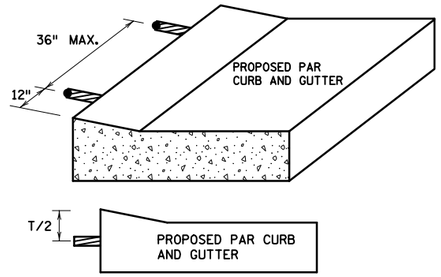
FLOW LINE PROFILE RAISE - FAN

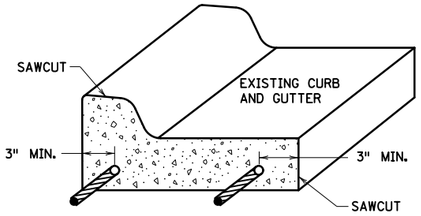


SECTION VIEW A-A
THICKENED SECTION
THROUGH CURB RAMP FLARES



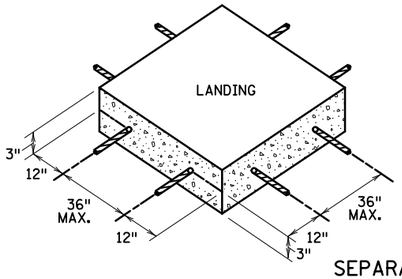
TYPICAL SIDEWALK SECTION
WITHIN INTERSECTION CORNER

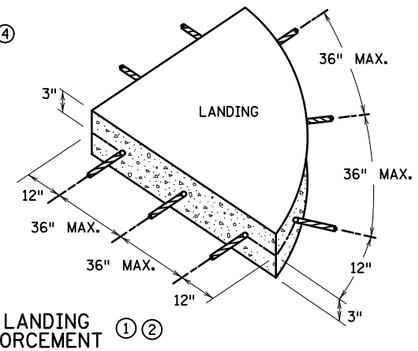




CURB AND GUTTER
REINFORCEMENT ③

CURB RAMP REINFORCEMENT DETAILS ②④





SEPARATE LANDING
POUR REINFORCEMENT ①②

GENERAL NOTES:

"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 FROM EXISTING SLOPE 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 (EPOXY COATED) AT 36" MAXIMUM CENTER TO CENTER MINIMUM 12" SPACING FROM CONSTRUCTION JOINTS. BARS TO BE ADJUSTED TO MATCH RAMP GRADE. BARS TO BE PAID BY EACH.

③ DRILL AND GROUT 2 - NO. 4 X 12" LONG (6" EMBEDDED) REINFORCEMENT BARS (EPOXY COATED). REINFORCEMENT REQUIRED FOR ALL CONSTRUCTION JOINTS. BARS TO BE PAID BY EACH.

④ THIS CURB LINE REINFORCEMENT DETAIL SHALL BE USED ON BITUMINOUS ROADWAYS. FOR CONCRETE ROADWAYS, SEE NOTE 6.

⑤ CONSTRUCT WITH EXPANSION MATERIAL PER MNDOT SPECIFICATION 3702 TYPES A-E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE.

⑥ USE AN APPROVED TYPE F (1/4 INCH THICK) SEPARATION MATERIAL. SEPARATION MATERIAL SHALL MATCH FULL HEIGHT DIMENSION OF ADJACENT CONCRETE.

LEAD EXPERT OFFICE	JEFFREY PERKINS OPERATIONS DIVISION		PEDESTRIAN CURB RAMP DETAILS	APPROVED: 11-04-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.250	6 OF 6
	DEPARTMENT OF TRANSPORTATION		STANDARD PLAN	SAP 027-651-011, SAP 027-619-029 SAP 027-594-005		SHEET NO. 59	
				CSAH 51		TOTAL SHEETS 336	

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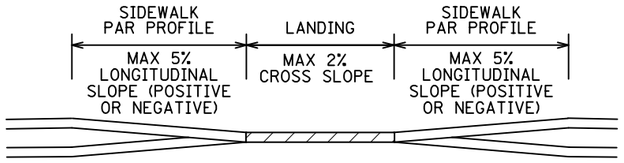
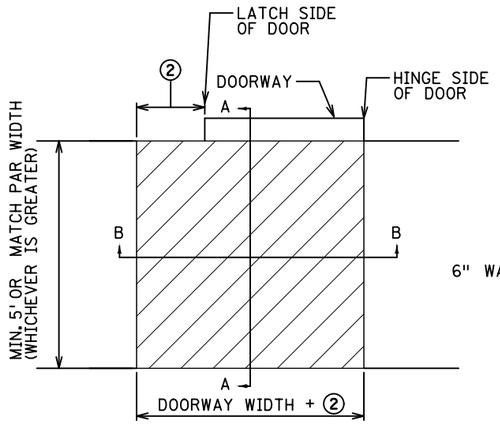
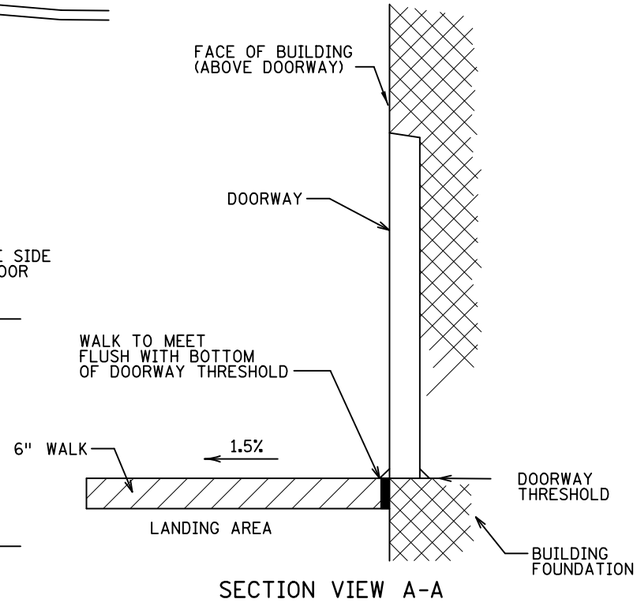


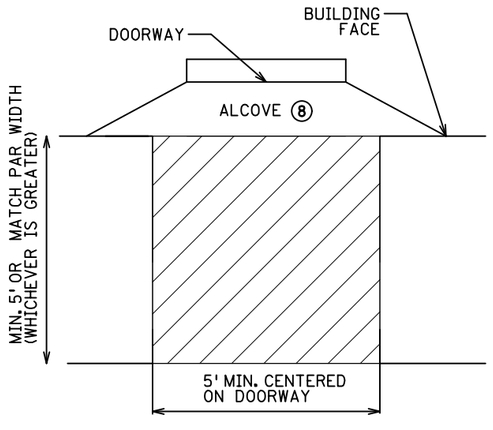
SECTION VIEW B-B



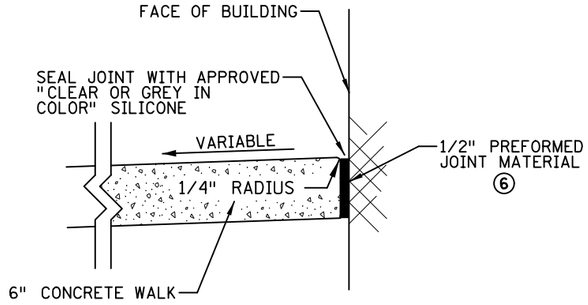
PLAN VIEW DOORWAY



SECTION VIEW A-A

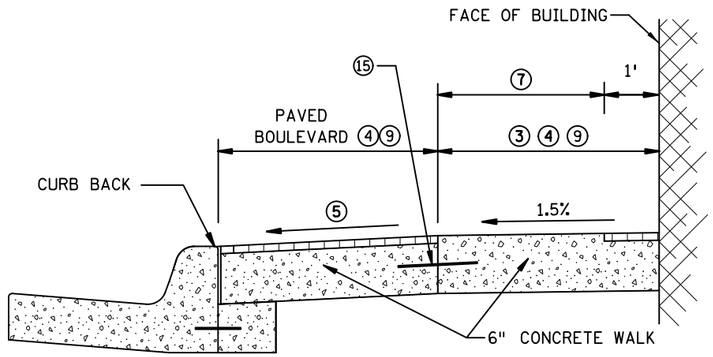


PLAN VIEW DOORWAY WITH ALCOVE

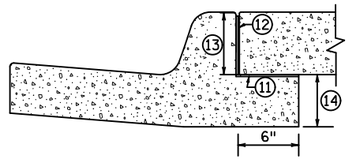


BUILDING JOINT SEAL (INCIDENTAL)

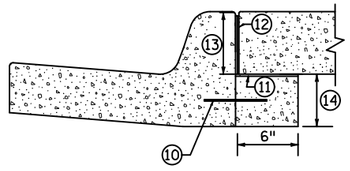
SIDEWALK LANDING REQUIREMENTS ①



DOWNTOWN SIDEWALK TYPICAL SECTION



SLIP FORM SILL



FIXED FORM SILL

SILL CURB SHOULD BE USED AT ALL LOCATIONS WHEN CONCRETE WALK IS AT BACK OF CURB, INCLUDING PAVED BOULEVARD.

SILL CURB SHALL NOT BE USED IN CURB RAMP AND DRIVEWAY AREAS, INCLUDING CONCRETE FLARES.

SILL CURB WITH 4" WALK CAN USE FIXED OR SLIP FORM OPTIONS.

NOTES:

6" WALK IS REQUIRED:
1) IN ALL SIDEWALK LOCATIONS WHERE VARIABLE SLOPED CONCRETE BOULEVARDS ARE PAVED, SUCH AS COMMERCIAL (STORE FRONT, DOWNTOWN) AREAS.
2) ANYTIME DRILL AND REINFORCEMENT IS USED TO TIE LONGITUDINAL JOINTS TOGETHER.
3) TO ELIMINATE LONGITUDINAL JOINT WHEN INCREASING PANEL SIZE OVER 36SF.
4) AT LOCATIONS WHERE MAINTENANCE EQUIPMENT WILL SUBJECT CONCRETE TO HEAVY LOADS.

ALL SIDEWALK AND BOULEVARD WIDTHS SHALL BE MEASURED FROM BACK OF CURB.

FIELD ADJUST SIDEWALK PROFILES TO MEET ALL DOORWAY THRESHOLDS.

SIDEWALK MUST MAINTAIN POSITIVE DRAINAGE AWAY FROM THE BUILDING TO THE ROADWAY.

SEE SPECIAL PROVISIONS FOR SILICONE SPECIFICATIONS.

① LANDING CRITERIA IS REQUIRED FOR ALL DOORS, STEPS, AND PRIVATE WALKS. FEASIBILITY DECREASES WITH NARROWER BOULEVARDS AND STEEPER SIDEWALK PROFILES.
② 18" MIN. WHEN DOOR SWINGS OUTWARD FROM BUILDING. 12" MIN WHEN DOOR SWINGS INWARD FROM BUILDING.
③ 6' MIN. PAR REQUIRED WHEN ADJACENT TO BUILDINGS.
④ 2/3 PAR TO 1/3 BOULEVARD SHOULD BE USED WHEN FEASIBLE. HOLD UNIFORM BOULEVARD WIDTH. 4' PREFERRED MINIMUM BOULEVARD.
⑤ 1%-5% FOR THE MAJORITY OF THE BLOCK, WITH EXCEPTIONS UP TO 8% IN CONSTRAINED AREAS.
⑥ CONSTRUCT USING APPROVED EXPANSION MATERIAL PER MNDOT TYPE A-E EXPANSION. LEAVE A MINIMUM ½" TOP GAP AND SEAL WITH MNDOT APPROVED SILICONE PER MNDOT SPEC 3722.
⑦ TO MINIMIZE VIBRATION AND ROLLING RESISTANCE, AREA SHALL BE FREE OF PAVERS, STAMPED CONCRETE, AND/OR EXCESSIVE JOINTING.
⑧ 2% MAX. PER BUILDING CODE. IF GREATER THAN 2%, FLATTEN AS FEASIBLE.
⑨ FORM CONTRACTION JOINTS AS NEEDED TO PRODUCE APPROXIMATELY SQUARE PANEL SIZE. CONRETE PANEL SIZE SHOULD NOT EXCEED 1½ : 1 LENGTH X WIDTH.
⑩ DRILL AND GROUT NO. 4 X 8" LONG TIE BARS (EPOXY COATED). 36" MAXIMUM SPACING BETWEEN BARS WITH 2" MINIMUM CONCRETE COVER PLACED 1' MINIMUM FROM ADJACENT CONSTRUCTION JOINTS. 1' MINIMUM FROM ADJACENT CONCRETE JOINTS. TIE BARS SHALL BE EMBEDDED 4" WITH 2" MINIMUM CONCRETE COVER AND ARE INCIDENTAL TO SILL PLACEMENT.
⑪ FURNISH AND INSTALL THE FULL WIDTH OF THE TOP OF SILL A MINIMUM 2ML THICK POLYTHENE SHEETING.
⑫ USE AN APPROVED TYPE F (¼ INCH THICK) SEPARATION MATERIAL. SEPARATION MATERIAL SHALL MATCH FULL HEIGHT DIMENSION OF ADJACENT CONCRETE.
⑬ DIMENSION TO BE SAME AS SIDEWALK THICKNESS, 4" MIN.
⑭ 6" WALK: 5" MIN. FOR B424; 7" MIN. FOR B624
4" WALK: 7" MIN. FOR B424; 9" MIN. FOR B624
⑮ DRILL AND GROUT NO. 4 X 12" LONG TIE BARS (EPOXY COATED). 36" MAXIMUM SPACING BETWEEN BARS WITH 2" MINIMUM CONCRETE COVER PLACED 1' MINIMUM FROM ADJACENT CONCRETE JOINTS.

LEAD EXPERT OFFICE	JEFFREY PERKINS OPERATIONS DIVISION		DRIVEWAY AND SIDEWALK DETAILS	APPROVED: 11-04-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.254	4 OF 4
	DEPARTMENT OF TRANSPORTATION		STANDARD PLAN	SAP 027-651-011, SAP 027-619-029 SAP 027-594-005 CSAH 51	SHEET NO. 60 TOTAL SHEETS 336		

PLOTTED/REVISED: 9/30/2025
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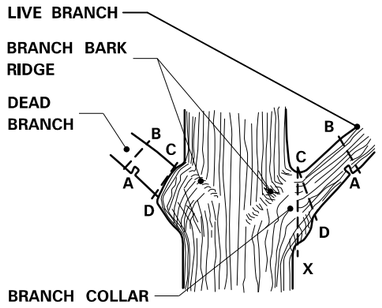


BRANCHES PRUNED AT TRUNK

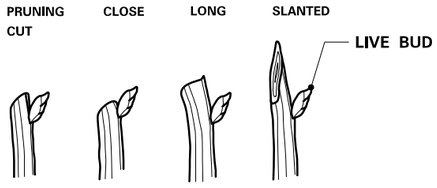
(SHIGO METHOD)

STEPS TO PRUNING WITH PRUNING SAW:

1. CUT PART WAY THROUGH THE BRANCH AT POINT A.
2. CUT COMPLETELY THROUGH BRANCH FROM POINT B TO A.
3. AT BRANCH COLLAR CUT FROM POINT C TO D.

INCORRECT CUT FROM POINT C TO X (TOO CLOSE) WILL RESULT IN DISCONTINUOUS CALLUS FORMATION AFTER ONE SEASON OF GROWTH.

CORRECT CUT FROM POINT C TO D (LEAVING BRANCH COLLAR BUT NOT THE STUB FROM POINT B TO A) WILL RESULT IN CONTINUOUS DOUGHNUT SHAPED CALLUS FORMATION AFTER ONE SEASON OF GROWTH.



BRANCHES PRUNED TO LIVE BUD

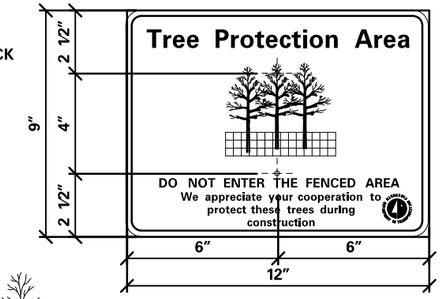
PRUNING NOTES:

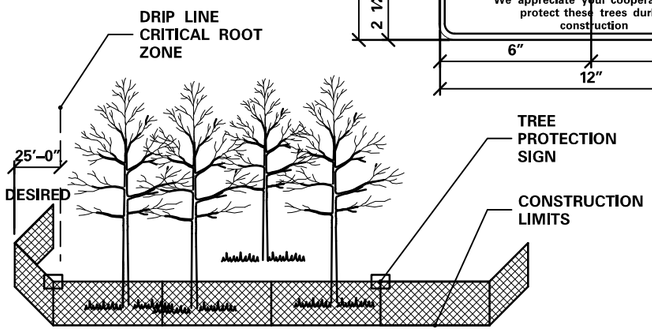
1. PRUNE USING CLEAN AND SHARP SCISSOR-TYPE PRUNER OR PRUNING SAW.
2. THE BEST TIME TO PRUNE IS LATE DORMANT SEASON OR EARLY SPRING.
3. AVOID PRUNING OAKS IN APRIL, MAY, JUNE OR JULY.
4. IF PRUNING IS NECESSARY OR IF WOUNDS OCCUR TO OAK TREES IN APRIL, MAY, JUNE OR JULY, IMMEDIATELY PAINT CUT SURFACE OR WOUND WITH LATEX PAINT OR SHELLAC.

PRUNING

(MnDOT 2571.3E.1 and 2571.3K.2.a(9))

1. FABRICATE 12" X 9" X 3⁄8" SIGN WITH 0.75" RADIUS CORNERS.
2. SIGN SHALL BE WHITE WITH BLACK LETTERING.
3. ATTACH SIGN TO POST USING 1" LENGTH WOOD SCREWS.

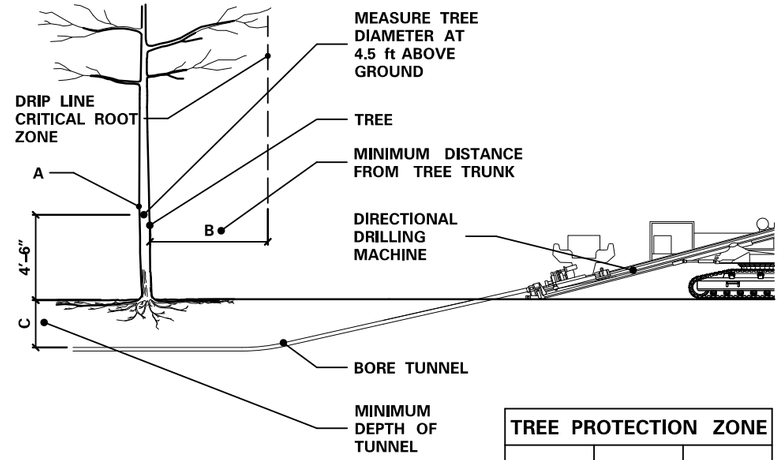




1. FURNISH AND INSTALL TEMPORARY FENCE AT THE TREE'S DRIPLINE OR CONSTRUCTION LIMITS AS SPECIFIED, PRIOR TO ANY CONSTRUCTION.
2. WHEN POSSIBLE PLACE FENCE 25 FEET BEYOND THE DRIP LINE.
3. PLACE TREE PROTECTION SIGNS ALONG FENCE AT 50' INTERVALS.

TEMPORARY FENCE

(MnDOT 2572.3A.1)



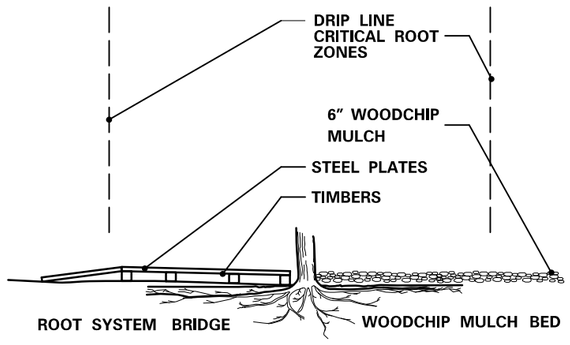
NOTE:

1. (A) IS THE DIAMETER OF TREES MEASURED 4'-6" FEET ABOVE THE GROUND AND IS TERMED THE "DIAMETER AT BREAST HEIGHT," (DBH).
2. USING A TREE DIAMETER TAPE, WRAP THE TAPE AROUND THE GIRTH OF THE TREE, AT THE DBH, BEING CAREFUL NOT TO TWIST THE TAPE.

TREE PROTECTION ZONE		
A	B	C
< 2"	2'	2'
2–4"	4'	2.5'
> 4–9"	6'	2.5'
> 9–14"	10'	3'
> 14–19"	12'	3.25'
> 19"	15'	4'

UTILITY CONSTRUCTION

(MnDOT 2572.3A.5)



IF CONSTRUCTION VEHICLES MUST PASS OVER ROOT ZONES, THE CONTRACTOR MUST EITHER:

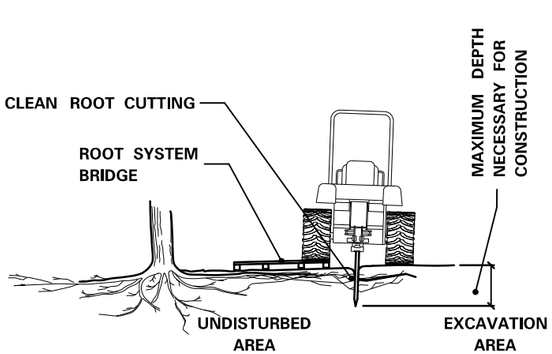
1. CONSTRUCT ROOT SYSTEM BRIDGES WITH STEEL PLATE SUPPORTED ON WOOD TIMBERS PLACED RADIALLY TO THE TREE TRUNK.

OR

2. PLACE A 6 INCH LAYER OF WOODCHIP MULCH OVER A TYPE III GEOTEXTILE (MnDOT 3733).

OTHER VEGETATION PROTECTION MEASURES

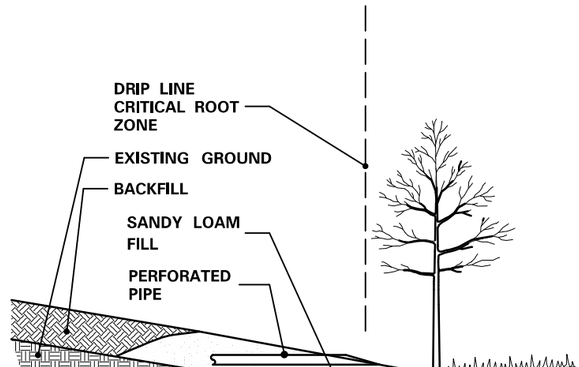
(MnDOT 2572.3A.12)



1. WHEN DESIGNATED IN THE PLAN OR DIRECTED BY THE ENGINEER, PRIOR TO EXCAVATION, ALL TREE ROOTS WILL BE CLEANLY CUT BY A VIBRATORY PLOW OR OTHER APPROVED ROOT CUTTER.
2. THE TREE ROOTS WILL BE CUT CLEANLY TO THE MINIMUM DEPTH NECESSARY FOR CONSTRUCTION.
3. IMMEDIATELY, AND CLEANLY CUT DAMAGED AND EXPOSED ROOTS.
4. ROOT ENDS EXPOSED BY EXCAVATION ACTIVITIES SHALL BE IMMEDIATELY COVERED WITH A 6" LAYER OF ADJACENT SOIL.
5. EXPOSED CUT OAK ROOTS SHALL BE IMMEDIATELY (WITHIN 5 MINUTES) TREATED WITH A WOUND DRESSING MATERIAL CONSISTING OF LATEX PAINT OR SHELLAC.

CLEAN ROOT CUTTING

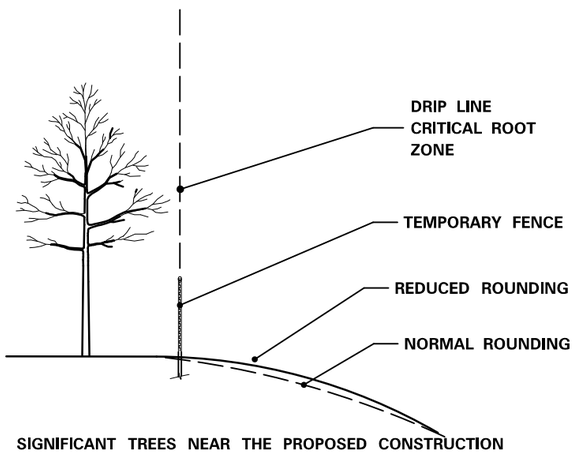
(MnDOT 2572.3A.2)



1. ANY FILL REQUIRED WITHIN THE DRIP LINE OF TREES, IS UNCOMPACTED ROOTING TOPSOIL BORROW.
2. EXCESSIVE FILL MAY REQUIRE PLACING PERFORATED PIPE WITH AT LEAST ONE DAYLIGHTED END OPENING AS AN AERATION SYSTEM.

ROOTING TOPSOIL BORROW

(MnDOT 2572.3A.4)



SIGNIFICANT TREES NEAR THE PROPOSED CONSTRUCTION LIMITS WILL BE IDENTIFIED IN THE PLAN OR BY THE ENGINEER AND WILL BE PRESERVED BY THE CONTRACTOR.

1. PLACE THE TEMPORARY FENCE.
2. REDUCE SLOPE ROUNDING WHERE ROOT ZONES ARE DISTURBED BY NORMAL SLOPE ROUNDING.
3. VARY BACKSLOPE STEEPNESS TO AVOID TREE LOSS OR UNNECESSARY ROOT DAMAGE.

SLOPE ROUNDING

LEAD EXPERT OFFICE	LYNN CLARKOWSKI CHIEF ENVIRONMENTAL OFFICER OFFICE OF ENVIRNOMENTAL STEWARDSHIP		PROTECTION AND RESTORATION OF VEGETATION	APPROVED: 12-11-2015 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.302	1 OF 1
	DEPARTMENT OF TRANSPORTATION		STANDARD PLAN	SAP 027-651-011, SAP 027-619-029 SAP 027-594-005 CSAH 51	SHEET NO. 61 TOTAL SHEETS 336		

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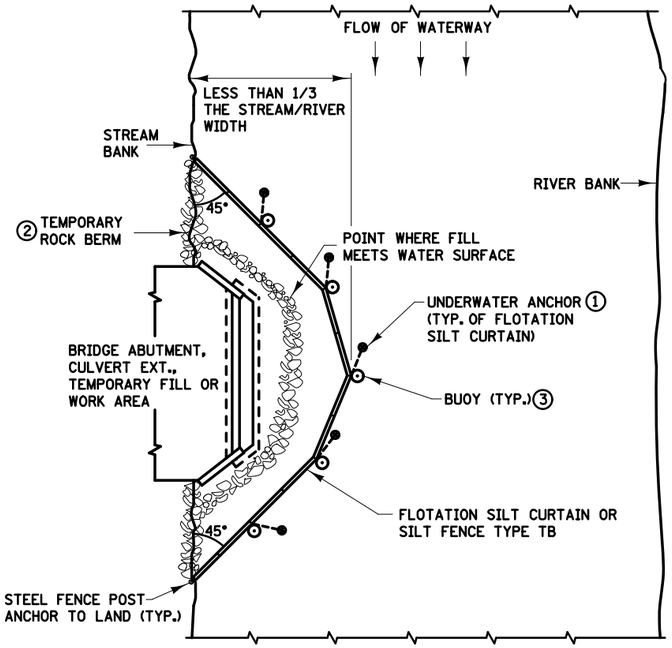
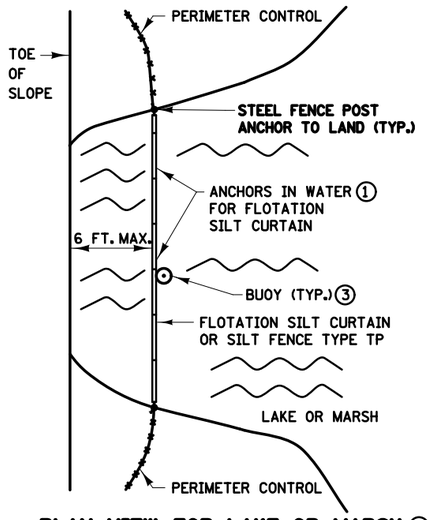
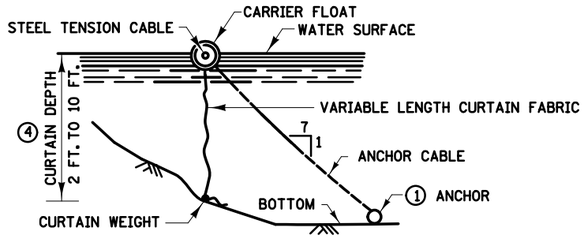


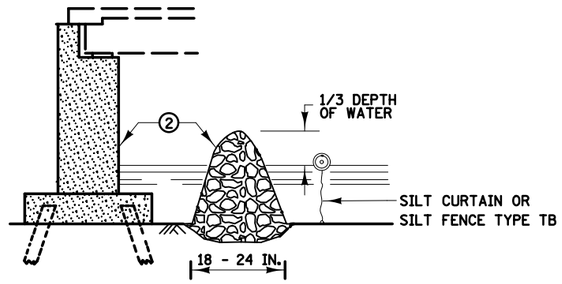
PLAN VIEW FOR STREAM ⑤



PLAN VIEW FOR LAKE OR MARSH ⑤



FLOTATION SILT CURTAIN



TEMPORARY ROCK BERM
FOR SEDIMENT CONTROL

INSTALLATION GUIDELINES
SILT FENCE TYPE TB

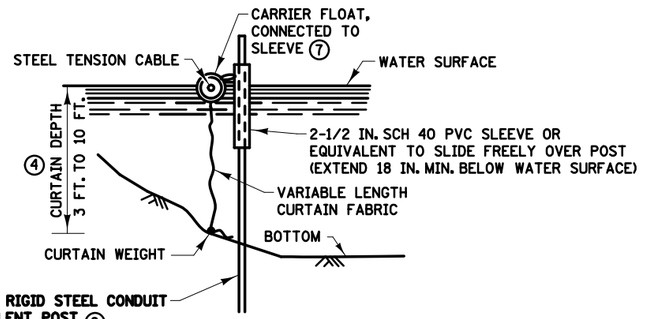
MINIMUM WATER DEPTH: 1 FT.
MAXIMUM WATER DEPTH: 3 FT.
MAXIMUM WATER VELOCITY: 5 FT./SEC.

INSTALLATION GUIDELINES ④
FLOTATION SILT CURTAIN
TYPE: STILL WATER

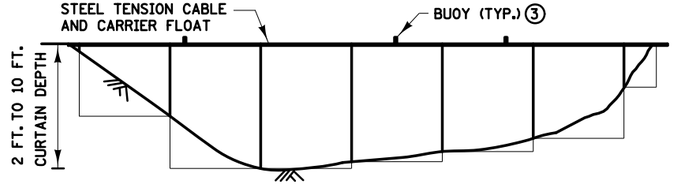
MINIMUM WATER DEPTH: 3 FT.
MAXIMUM WATER DEPTH: 10 FT.
MAXIMUM WATER VELOCITY: 2 FT./SEC.
MAXIMUM WAVE HEIGHT: 1 FT

INSTALLATION GUIDELINES ④
FLOTATION SILT CURTAIN
TYPE: MOVING WATER

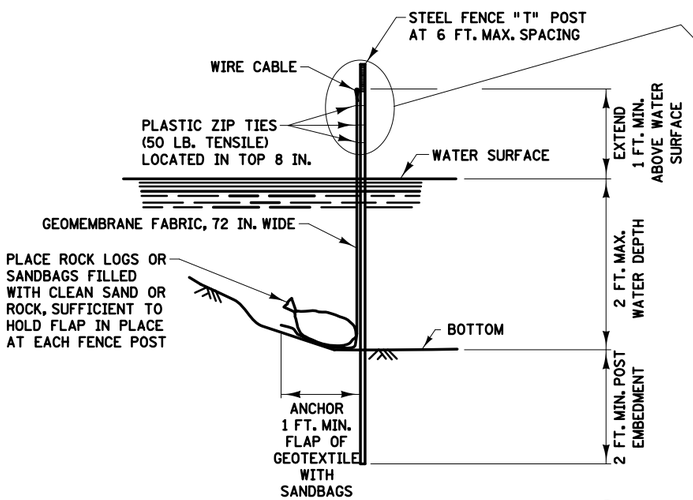
MINIMUM WATER DEPTH: 3 FT.
MAXIMUM WATER DEPTH: 10 FT.
MAXIMUM WATER VELOCITY: 5 FT./SEC.
MAXIMUM WAVE HEIGHT: 2 FT.



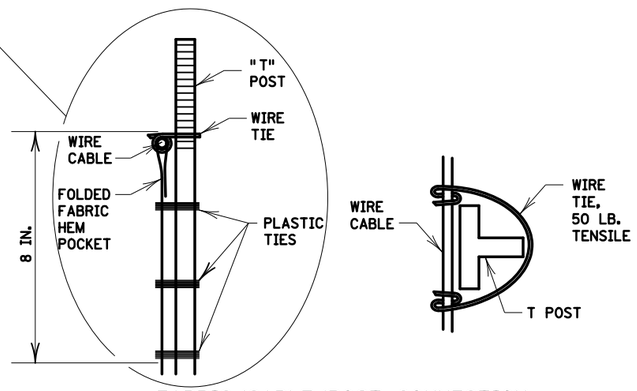
ALTERNATE FLOTATION SILT CURTAIN



FRONT VIEW FOR FLOTATION SILT CURTAIN



SILT FENCE TYPE TB ⑥



FABRIC/CABLE/POST CONNECTION

NOTES:

SEE SPECS. 2573, 3886, 3887 & 3893.

① FOR ANCHOR SPACING AND WEIGHT REQUIREMENTS, SEE SPEC. 2573.

② IN AREAS WHERE THE PLAN CALLS FOR RIPRAP AT A BRIDGE, CULVERT, OR SLOPE, A TEMPORARY ROCK BERM CONSTRUCTED FROM THE RIPRAP CAN BE USED TO PROVIDE ADDITIONAL PROTECTION. WHEN THE WORK IS COMPLETE THE RIPRAP CAN THEN BE MOVED TO THE PERMANENT LOCATION INDICATED IN THE PLANS. THE TEMPORARY ROCK BERM IS INCIDENTAL.

③ ON U.S. COAST GUARD OR OTHER MOTORIZED WATERWAYS, BUOYS ARE REQUIRED TO MARK THE ENDS AND SPECIAL AREAS FOR VISIBILITY. PLACE BUOYS AS REQUIRED FOR NAVIGATIONAL PURPOSES.

④ MINIMUM WATER DEPTH APPLIES TO THE DEEPEST POINT ALONG THE FLOTATION SILT CURTAIN OR SILT FENCE TYPE TB FOR DETERMINING APPLICABILITY OF FLOTATION SILT CURTAIN OR SILT FENCE TYPE TB.

⑤ SILT CURTAIN SHOULD BE REMOVED WHEN THE AREA CONTRIBUTING DIRECT RUNOFF HAS BEEN TEMPORARILY OR PERMANENTLY STABILIZED. SILT CURTAIN SHOULD ALSO BE REMOVED BEFORE WINTER IF ICE UP OR ICE FLOW IS ANTICIPATED.

⑥ EMBED POST INTO BOTTOM A MINIMUM OF 40% OF THE WATER DEPTH (INCLUDING WAVE HEIGHT), BUT IN NO CASE SHALL EMBEDMENT BE LESS THAN 2 FEET.

⑦ ANCHOR FLOAT MUST BE CONNECTED SECURELY TO SLEEVE WITH A MINIMUM TENSILE STRENGTH OF 100 LBS. CONNECTION METHOD MUST ALLOW FOR SLEEVE TO MOVE FREELY ON POST.

⑧ PROVIDE SUFFICIENT NUMBER OF POST ANCHORS TO MAINTAIN SILT CURTAIN POSITION.

LEAD EXPERT OFFICE	LYNN CLARKOWSKI CHIEF ENVIRONMENTAL OFFICER OFFICE OF ENVIRNOMENTAL STEWARDSHIP	TEMPORARY SEDIMENT CONTROL SILT CURTAIN OR SILT FENCE TYPE TB	APPROVED: 02-28-2017 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.405	1 OF 8
DEPARTMENT OF TRANSPORTATION		STANDARD PLAN	SAP 027-651-011, SAP 027-619-029 SAP 027-594-005	SHEET NO.	62	
			CSAH 51	TOTAL SHEETS	336	

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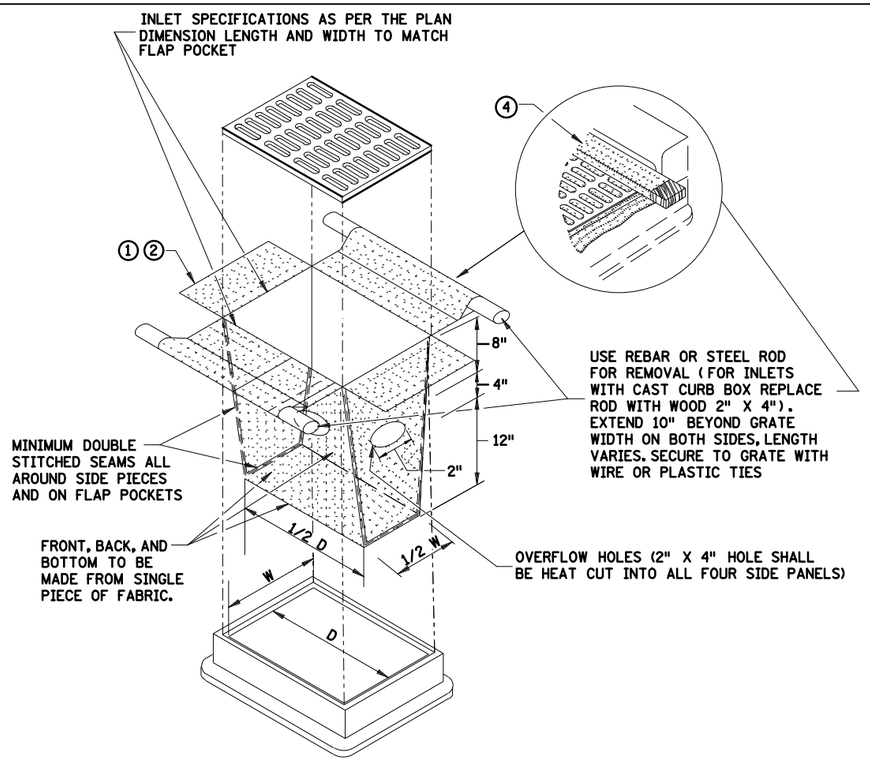
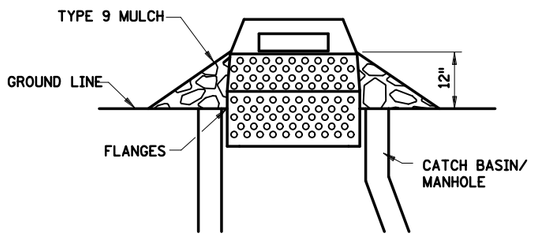


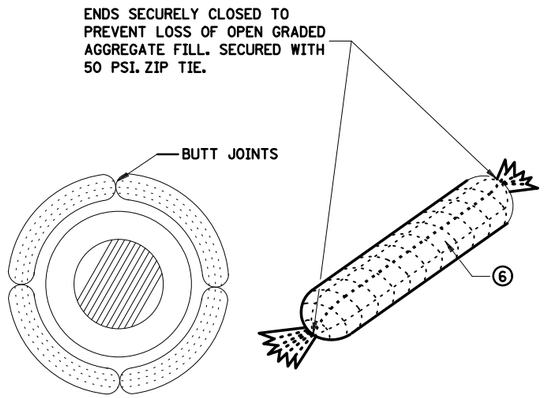
FILTER BAG INSERT ③

(CAN BE INSTALLED IN ANY INLET TYPE
WITH OR WITHOUT A CURB BOX)

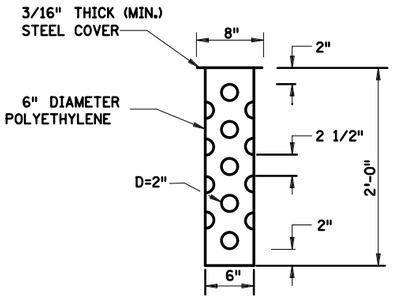


SEDIMENT CONTROL INLET HAT

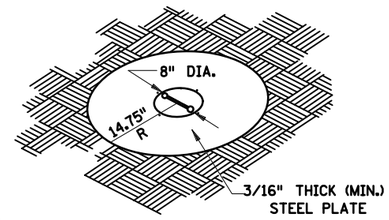
NOTE:
THE SEDIMENT CONTROL BARRIER SHALL BE A METAL OR PLASTIC/POLYETHYLENE RISER SIZED TO FIT INSIDE THE CATCH BASIN/MANHOLE; HAVE PERFORATIONS TO ALLOW FOR WATER INFILTRATION; HAVE AN OVERFLOW OPENING, FLANGES AND A LID/COVER.



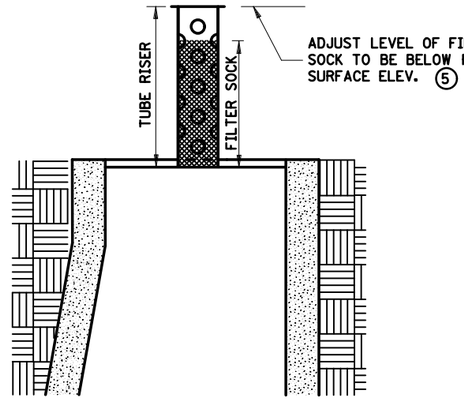
ROCK LOG/COMPOST LOG



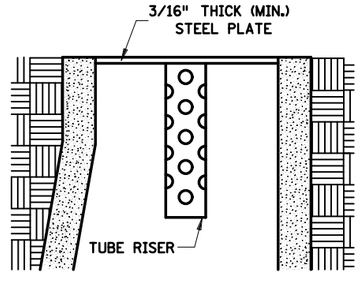
TUBE RISER



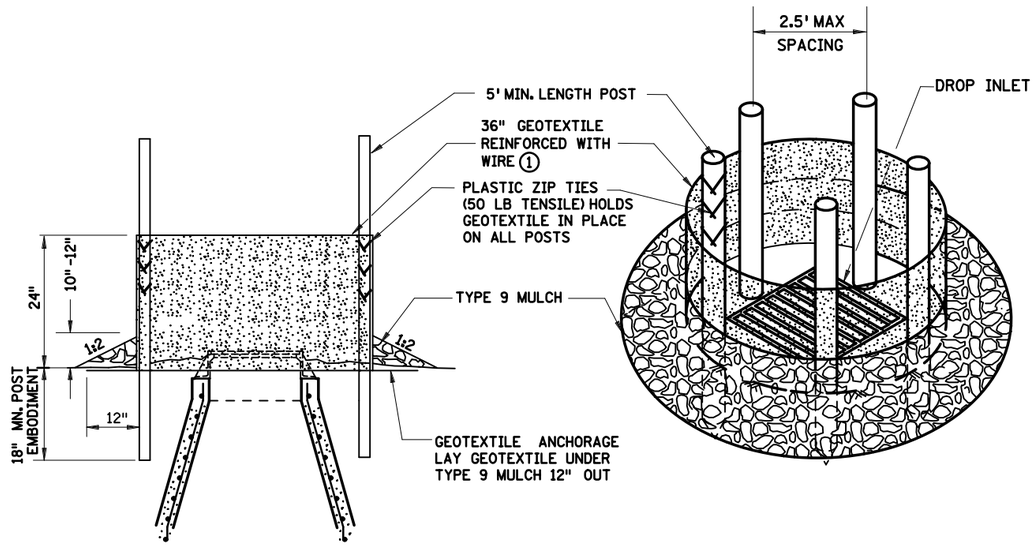
PERSPECTIVE VIEW



SECTION
(UP POSITION)



SECTION
(DOWN POSITION)



SILT FENCE RING AND ROCK FILTER BERM

USE WHERE INLET DRAINS IN AN AREA WITH SLOPES AT 1:3 or LESS

POP-UP HEAD

NOTES:
SEE SPECS. 2573, 3137, & 3886.

DEVICES MUST BE ADJUSTED ACCORDINGLY AS TO NOT CAUSE FLOODING ON ROADWAY THAT WOULD IMPEED TRAFFIC FLOW.

① ALL GEOTEXTILE USED FOR INLET PROTECTION SHALL BE MONOFILAMENT IN BOTH DIRECTIONS, MEETING SPEC. 3886.

② FINISHED SIZE, INCLUDING POCKETS WHERE REQUIRED SHALL EXTEND A MINIMUM OF 10 INCHES AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.

③ INSTALLATION NOTES:
DO NOT PLACE FILTER BAG INSERT IN INLETS SHALLOWER THAN 30 INCHES, MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE. THE PLACED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE OF 3 INCHES BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES. WHERE NECESSARY THE CONTRACTOR SHALL CLINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3 INCH SIDE CLEARANCE.

④ FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2 INCH X 4 INCH OR USE A ROCK SOCK OR SAND BAGS IN PLACE OF THE FLAP POCKETS.

⑤ SOCK HEIGHT MUST NOT BE SO HIGH AS TO SLOW DOWN WATER FILTRATION TO CAUSE FLOODING OF THE ROADWAY.

⑥ GEOTEXTILE SOCK BETWEEN 4-10 FEET LONG AND 4-6 INCH DIAMETER. SEAM TO BE JOINED BY TWO ROWS OF STITCHING WITH A PLASTIC MESH BACKING OR PROVIDE A HEAT BONDED SEAM (OR APPROVED EQUIVALENT). FILL ROCK LOG WITH OPEN GRADED AGGREGATE CONSISTING OF SOUND DURABLE PARTICLES OF COARSE AGGREGATE CONFORMING TO SPEC. 3137 TABLE 3137-1; CA-3 GRADATION.

LEAD EXPERT OFFICE	LYNN CLARKOWSKI CHIEF ENVIRONMENTAL OFFICER OFFICE OF ENVIRNOMENTAL STEWARDSHIP	TEMPORARY SEDIMENT CONTROL STORM DRAIN INLET PROTECTION	APPROVED: 02-28-2017 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.405	4 OF 8
	DEPARTMENT OF TRANSPORTATION	STANDARD PLAN	SAP 027-651-011, SAP 027-619-029 SAP 027-594-005	SHEET NO.	63	
			CSAH 51	TOTAL SHEETS	336	

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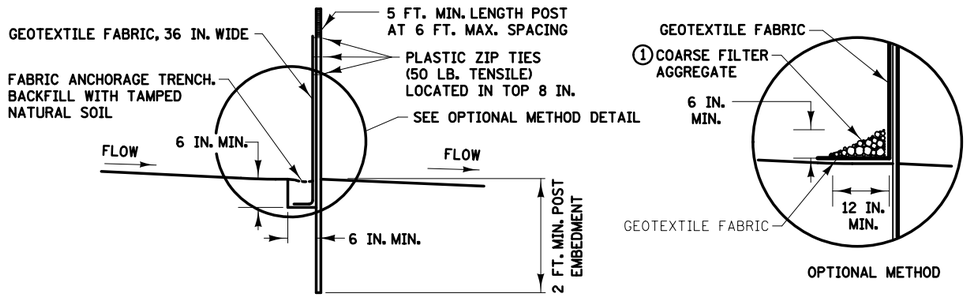
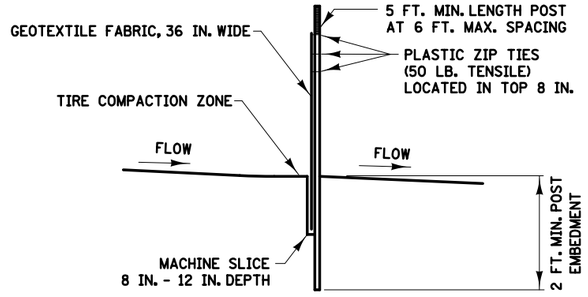
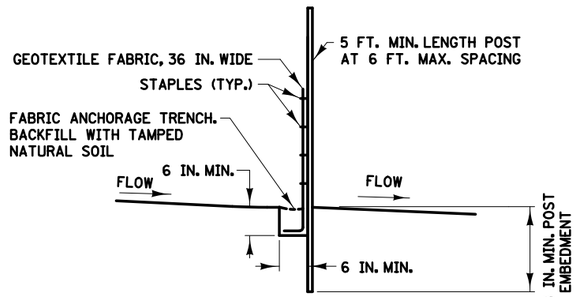


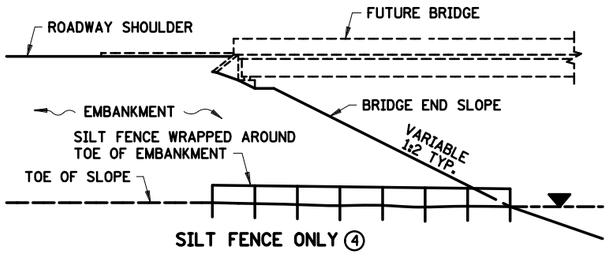
SILT FENCE TYPE HI ②
(HAND INSTALLED)



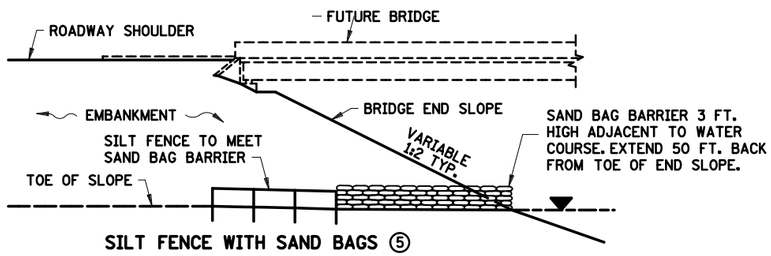
SILT FENCE TYPE MS ②
(MACHINE SLICED)



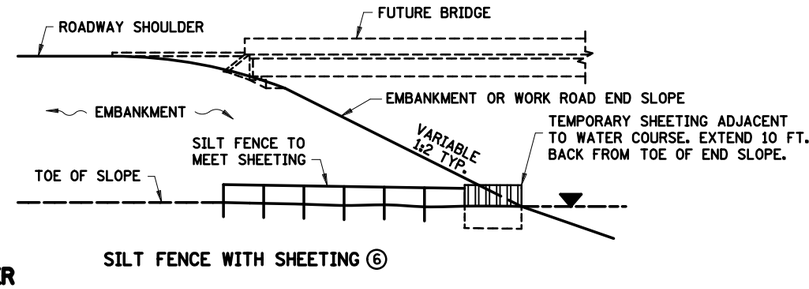
SILT FENCE TYPE PA ③
(PREASSEMBLED)



SILT FENCE ONLY ④

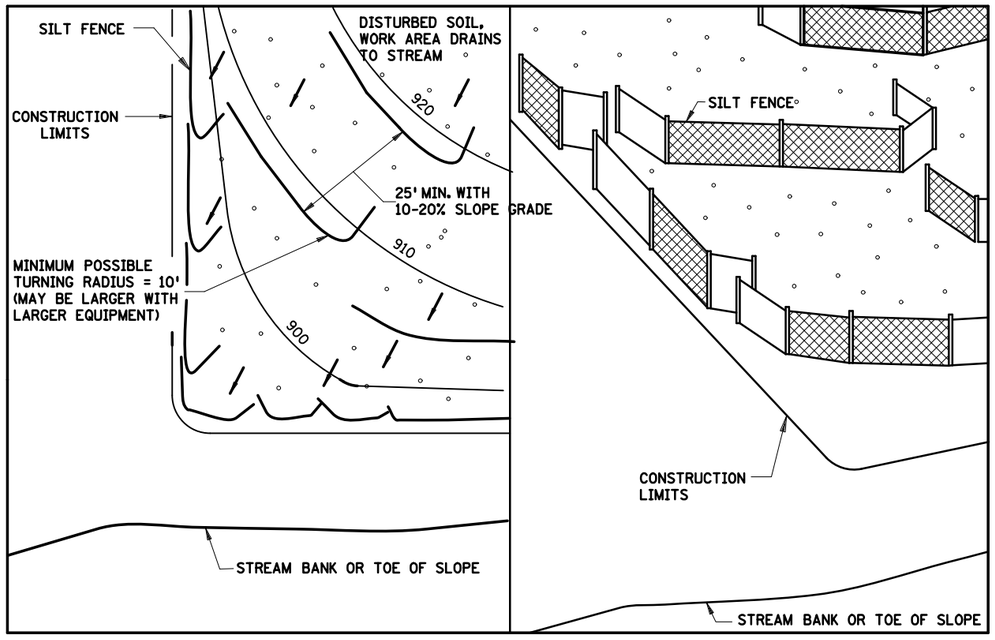


SILT FENCE WITH SAND BAGS ⑤



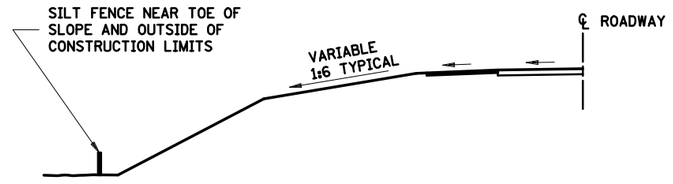
SILT FENCE WITH SHEETING ⑥

INSTALLATION AT BRIDGE EMBANKMENT ADJACENT TO WATER



PLAN VIEW — PERSPECTIVE VIEW

J-HOOK INSTALLATION



LOCATION AT TOE OF ROADWAY EMBANKMENT

NOTES:

SEE SPECS. 2573, 3149 & 3886.

① COARSE FILTER AGGREGATE (SPEC. 3149) SHALL BE INCIDENTAL.

② TO PROTECT AREAS FROM SHEET FLOW. MAXIMUM CONTRIBUTING AREA: 1 ACRE.

③ TO PROTECT AREAS FROM SHEET FLOW. MAXIMUM CONTRIBUTING AREA: 0.25 ACRE.

④ WATER COURSE FLOW VELOCITY: STANDING.
CONTRIBUTING SLOPE AREA: 1./2 ACRE.

⑤ WATER COURSE FLOW VELOCITY: 1 TO 7 FT./SEC.
CONTRIBUTING SLOPE AREA: 1. ACRE.

⑥ WATER COURSE FLOW VELOCITY: 8 TO 15 FT./SEC.
CONTRIBUTING SLOPE AREA: 3 ACRES.

LEAD EXPERT OFFICE	LYNN CLARKOWSKI CHIEF ENVIRONMENTAL OFFICER OFFICE OF ENVIRNOMENTAL STEWARDSHIP	TEMPORARY SEDIMENT CONTROL SILT FENCE	APPROVED: 02-28-2017 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.405	6 OF 8
DEPARTMENT OF TRANSPORTATION		STANDARD PLAN	SAP 027-651-011, SAP 027-619-029 SAP 027-594-005	SHEET NO.	64	
			CSAH 51	TOTAL SHEETS	336	

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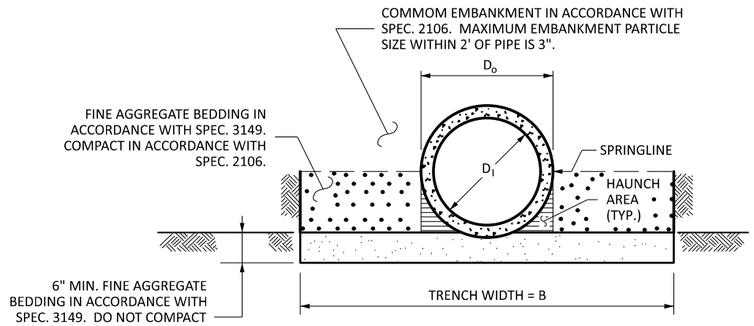
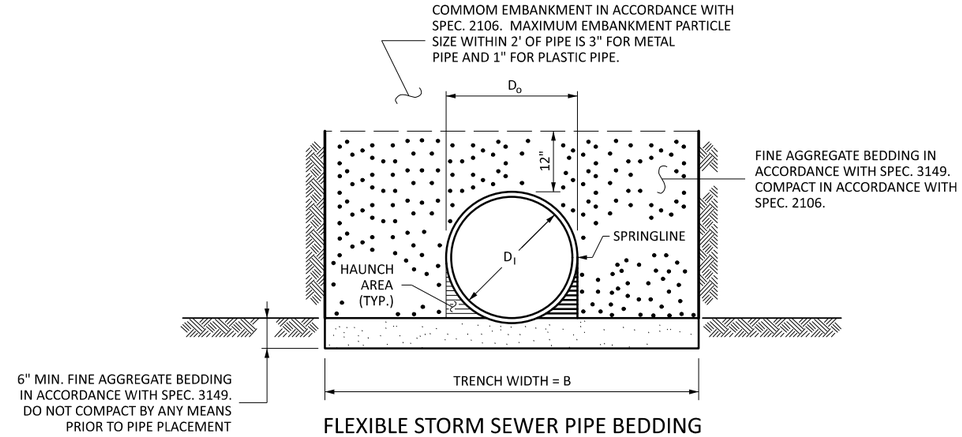


RIGID STORM SEWER PIPE BEDDING

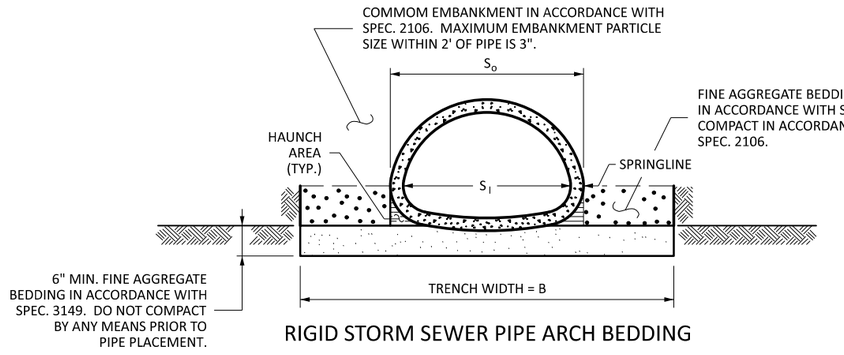
TRENCH BASE WIDTH (1)(2)	
PIPE DIA. D_I OR S_I	TRENCH WIDTH B
< 42"	D_O + 24"
42" TO 54"	1.5 x D_O
> 54"	D_O + 36"

PLASTIC PIPE WITH H > 10' (1)(2)

PIPE DIA.	TRENCH WIDTH (FEET)
12"	5' 2"
15"	5' 6"
18"	5' 9"
24"	6' 6"
30"	8' 0"
36"	9' 6"
42"	11' 0"
48"	12' 6"



FLEXIBLE STORM SEWER PIPE BEDDING



RIGID STORM SEWER PIPE ARCH BEDDING

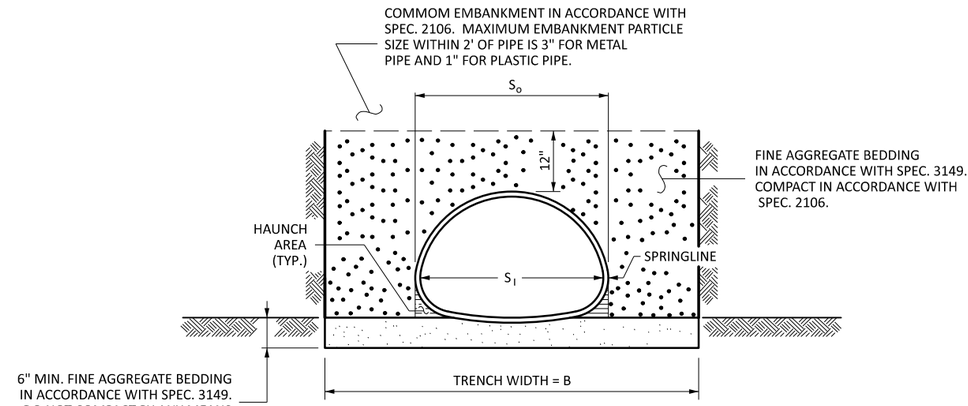
LEGEND

D_I = INSIDE DIAMETER OF ROUND PIPE (INCHES).
D_O = OUTSIDE DIAMETER OF ROUND PIPE (INCHES).
S_I = INSIDE SPAN OF PIPE-ARCH (INCHES).
S_O = OUTSIDE SPAN OF PIPE-ARCH (INCHES).
H = FILL COVER HEIGHT OVER PIPE (FEET).

= UNDISTURBED SOIL

= COMPACTED BEDDING

= LOOSE BEDDING, COMPACTED AFTER PIPE PLACEMENT



FLEXIBLE STORM SEWER PIPE ARCH BEDDING

CONSTRUCTION SEQUENCE

1. LOOSELY PLACE 6" OF FINE AGGREGATE BEDDING MATERIAL TO GRADE. DO NOT COMPACT PRIOR TO PIPE PLACEMENT.
2. FOR PIPES WITH BELL, REMOVE MATERIAL IN BELL AREA PRIOR TO PLACEMENT.
3. FURNISH AND INSTALL PIPE TO GRADE.
4. AFTER PLACEMENT OF THE PIPE, PLACE ADDITIONAL FINE AGGREGATE BEDDING AND COMPACT THE FULL LENGTH ON BOTH SIDES OF THE PIPE UNDERNEATH THE HAUNCH AREA BY FIRST SHOVEL SLICING (MANUALLY SHOVE THE BLADE END OF SHOVEL AT AN ANGLE DOWN THE ENTIRE LENGTH OF HAUNCH UNDER THE PIPE). THEN COMPACT THE HAUNCH AT AN ANGLE USING A POWERED MECHANICAL OR PNEUMATIC DEVICE (I.E. POLE TAMPER, JUMPING JACK, OR SIMILAR).
5. COMPACT THE REMAINING MATERIAL OUTSIDE THE HAUNCH AREA TO THE REQUIREMENTS OF SPEC. 2106 ENSURING THAT THE ENTIRE LENGTH OF PIPE IS SUPPORTED UNIFORMLY BY BEDDING.
6. PLACE AND COMPACT BACKFILL EVENLY AND SIMULTANEOUSLY IN 6" LIFTS ON EACH SIDE OF THE PIPE UP TO THE SPRINGLINE FOR RIGID PIPE AND 12" ABOVE THE TOP OF THE PIPE FOR FLEXIBLE PIPE WHEN COMPACTED.
7. COMPLETE REMAINING BACKFILL.

NOTES

EXCAVATE AND CONSTRUCT ALL TRENCHES AND SLOPES IN ACCORDANCE WITH OSHA REQUIREMENTS.

PIPE SIZE IS BASED ON THE NOMINAL INSIDE DIAMETER OR SPAN.

PROTECT ALL PIPE DURING CONSTRUCTION IN ACCORDANCE WITH SPEC. 2503.

WHEN RIPRAP IS REQUIRED AT THE APRON END, SEE STANDARD PLATE OR PLAN FOR RIPRAP PLACEMENT AND QUANTITIES. FOR APRONS WITHOUT RIPRAP PLACE 6" MIN. FINE AGGREGATE BEDDING UNDER APRONS. USE A TRENCH WIDTH EQUAL TO THE PIPE TRENCH WIDTH.

FINE AGGREGATE BEDDING INCLUDING THE COST OF EXCAVATION, PLACEMENT AND COMPACTION IS INCLUDED IN THE CONTRACT UNIT PRICE OF THE RELEVANT STORM SEWER PAY ITEM.

EXCAVATION AND BACKFILL WITH COMMON EMBANKMENT ARE NOT TABULATED SEPARATELY BUT ARE INCLUDED IN THE CONTRACT UNIT PRICE OF THE RELEVANT STORM SEWER PAY ITEM.

RIGID PIPE INCLUDES CONCRETE. FLEXIBLE PIPE INCLUDES METAL, AND PLASTIC MATERIALS SUCH AS CORRUGATED POLYPROPYLENE (PP), CORRUGATED POLYETHYLENE (CP) AND POLYVINYL CHLORIDE (PVC).

(1) MODIFY TRENCH WIDTH AND SLOPE AS NECESSARY TO COMPLY WITH OSHA REQUIREMENTS.

(2) USE PLASTIC PIPE TABLE FOR TRENCH WIDTHS WHEN FILL HEIGHT IS GREATER THAN 10'.

LEAD EXPERT OFFICE	EDWARD LUTGEN OFFICE DIRECTOR BRIDGE OFFICE		STANDARD STORM SEWER BEDDING FOR RIGID AND FLEXIBLE PIPE	APPROVED: 11-15-2024	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.442	1 OF 1

DEPARTMENT OF TRANSPORTATION

STANDARD PLAN

SAP 027-651-011, SAP 027-619-029
SAP 027-594-005

CSAH 51

SHEET NO. 65

TOTAL SHEETS 336

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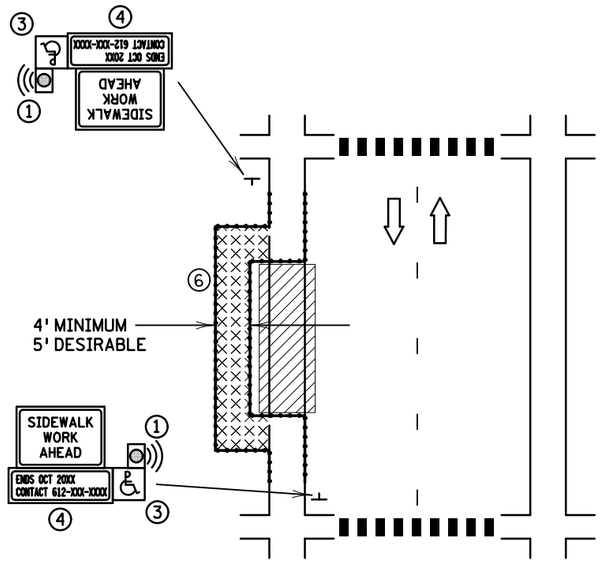
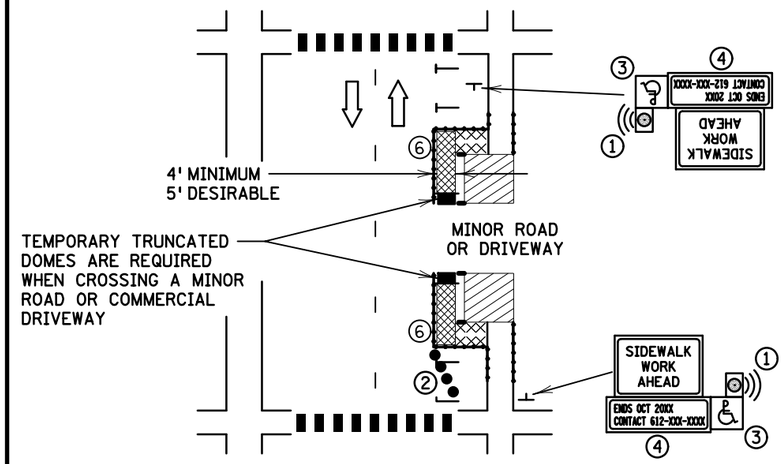


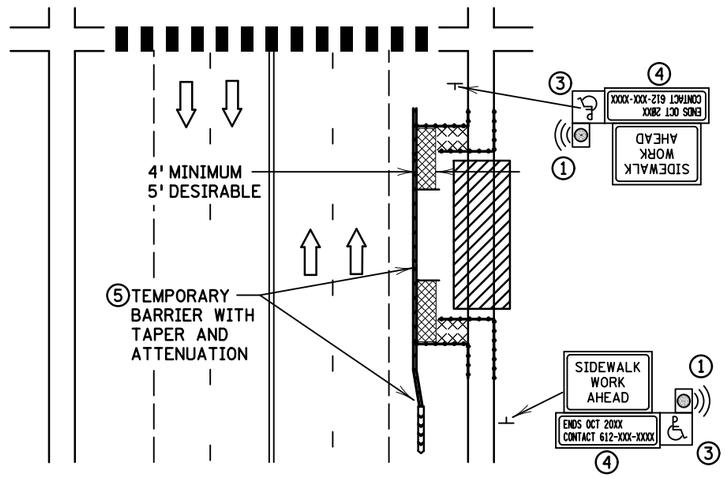
BYPASS TYPE A

BYPASS ON ADJACENT AVAILABLE RIGHT OF WAY



BYPASS TYPE B

SIDEWALK BYPASS USING PARKING OR SHOULDER ON LOW-SPEED ROADWAY



BYPASS TYPE C

SIDEWALK BYPASS USING SHOULDER OR PARKING LANE ON A MULTI-LANE OR HIGH-SPEED ROADWAY

NOTES:

WHEN CLOSING OR RELOCATING CROSSWALKS OR SIDEWALKS, PROVIDE DETECTABLE TEMPORARY FACILITIES AND INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH EXISTING PEDESTRIAN FACILITIES. THE ALTERNATE PEDESTRIAN ROUTE (APR) MUST REMAIN OPEN AT ALL TIMES.

TEMPORARY TRAFFIC CONTROL DEVICES FOR PEDESTRIANS ARE SHOWN. OTHER DEVICES MAY BE NECESSARY TO CONTROL VEHICULAR TRAFFIC. STAGE WORK AS NECESSARY TO PROVIDE AN APR AT ALL TIMES FOR ROADWAYS WITH NO AVAILABLE DETOURS. PROVIDE A SMOOTH, CONTINUOUS, HARD SURFACE THROUGH THE LENGTH OF THE APR.

PROVIDE A FIRM, STABLE, FREE-DRAINING, NON-SLIP, TEMPORARY WALKWAY SURFACE REGARDLESS OF WEATHER CONDITIONS. SUPPORT THE TEMPORARY WALKWAY SURFACE WITH A SOLID BASE TO COVER SHORT SEGMENTS OF ROUGH, SOFT, OR UNEVEN GROUND. THE TEMPORARY WALKWAY SURFACE WILL ALLOW NORMAL USAGE OF WHEELCHAIRS, WALKERS, STROLLERS, AND OTHER MOBILITY DEVICES. CONCRETE, BITUMINOUS, STEEL, RUBBER, WOOD (¾" OR THICKER), AND PLASTIC ARE ACCEPTABLE SURFACE MATERIALS FOR THE TEMPORARY WALKWAY SURFACE. GRAVEL, MILLINGS, AND OTHER UNEVEN SURFACES ARE NOT ACCEPTABLE SURFACE MATERIALS. IF NEEDED, PROVIDE SOIL STABILIZATION TO PREVENT EROSION AROUND TEMPORARY SURFACES. IF NEEDED, PROVIDE SOIL STABILIZATION TO PREVENT EROSION AROUND TEMPORARY SURFACES.

IF A 60" PEDESTRIAN WALKWAY WIDTH ISN'T PROVIDED FOR THE ROUTE, THEN A 60" BY 60" PASSING SPACE IS REQUIRED EVERY 200'. THE MINIMUM WIDTH OF THE WALKWAY IS 48".

COVER OR DEACTIVATE ANY PEDESTRIAN TRAFFIC SIGNALS CONTROLLING CLOSED CROSSWALKS.

POST-MOUNTED SIGNS LOCATED ADJACENT TO A SIDEWALK SHALL HAVE A 7' MINIMUM CLEARANCE FROM THE BOTTOM OF THE LOWEST SIGN TO THE SIDEWALK SURFACE. SHARED-USE PATH SHALL HAVE 8' MINIMUM CLEARANCE FROM THE BOTTOM OF THE LOWEST SIGN TO THE SHARED USE PATH SURFACE.

APR SHOULD BE KEPT FREE OF TRASH, SEDIMENT, AND DEBRIS.

ANY PORTABLE SIGN OR BARRICADE PLACED OR STORED IN A PEDESTRIAN WALKWAY THAT COULD POSE A HAZARD TO A VISUALLY-IMPAIRED PEDESTRIAN SHALL HAVE A DETECTABLE EDGE TO GUIDE THE PEDESTRIAN AROUND THE HAZARD. FOR ADDITIONAL GUIDANCE, SEE THE "DETECTABLE EDGE FOR SIGN ON PORTABLE STAND" DETAIL ON STADARD PLAN 5-297.813.

MINIMIZE DISRUPTION TO PEDESTRIANS TO THE MAXIMUM EXTENT FEASIBLE BY PROVIDING AN APR IN THE FOLLOWING ORDER OF PREFERENCE:

2. PROVIDE THE APR ON THE SAME SIDE OF THE ROADWAY AS THE DISRUPTED ROUTE UTILIZING BYPASSES.
3. WHERE NOT FEASIBLE TO PROVIDE A SAME-SIDE APR, PROVIDE AN APR DETOUR ON THE OTHER SIDE OF THE ROADWAY.

   WHERE NOT FEASIBLE TO PROVIDE AN APR ON EITHER SIDE OF THE ROADWAY, PROVIDE AN APR DETOUR WITH TRAILBLAZING SIGNS.

① CONSIDER PROVIDING AN APPROVED AUDIBLE MESSAGE DEVICE OR TACTILE MESSAGE FOR PEDESTRIANS WITH VISUAL DISABILITIES.

② RECOMMENDED TAPER WHEN THE CLOSED AREA WAS PREVIOUSLY USED AS AN INTERMITTENT TRAFFIC LANE OR BYPASS LANE IS 25' LONG USING FIVE EQUALLY-SPACED CHANNELIZING DEVICES.

③ FOR FULLY-ACCESSIBLE WALKWAYS THROUGH WORKZONES, CONSIDER DISPLAYING THE INTERNATIONAL SYMBOL OF ACCESSIBILITY.

④ INCLUDE INFORMATION SUCH AS THE DURATION OF THE WALKWAY RESTRICTIONS (BEGINNING AND/OR END DATES) AND A PROJECT CONTACT NUMBER FOR 24/7 QUESTIONS OR REPORTING HAZARDS ON SIGNS FOR TEMPORARY PEDESTRIAN DETOURS.

⑤ SEE THE MOST CURRENT EDTION OF THE MNDOT TEMPORARY BARRIER GUIDANCE MANUAL FOR GUIDANCE ON PLACEMENT AND USAGE OF TEMPORARY BARRIER.

⑥ PROVIDE SOIL STABILIZATION AROUND TEMPORARY SURFACES TO PREVENT EROSION, IF NEEDED.

LEGEND

- SIGN
- WORK AREA
- PEDESTRIAN CHANNELIZATION DEVICE
- TEMPORARY BARRIER
- DIRECTION OF TRAFFIC
- CHANNELIZER
- AUDIBLE MESSAGE DEVICE (AMD)
- TEMPORARY CURB RAMP WITH DETECTABLE EDGES
- TEMPORARY WALKWAY SURFACE

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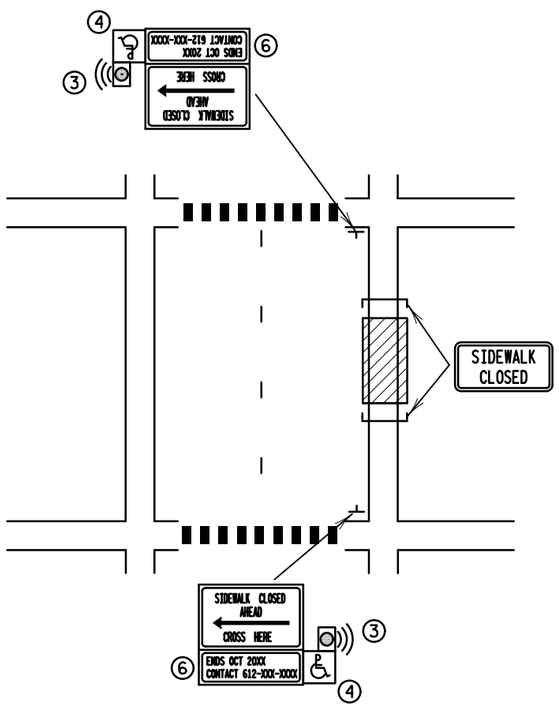
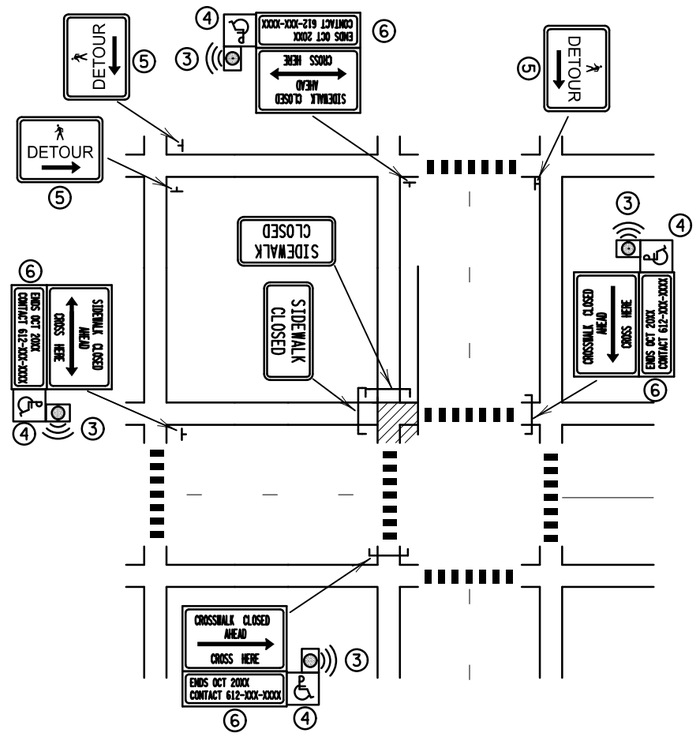
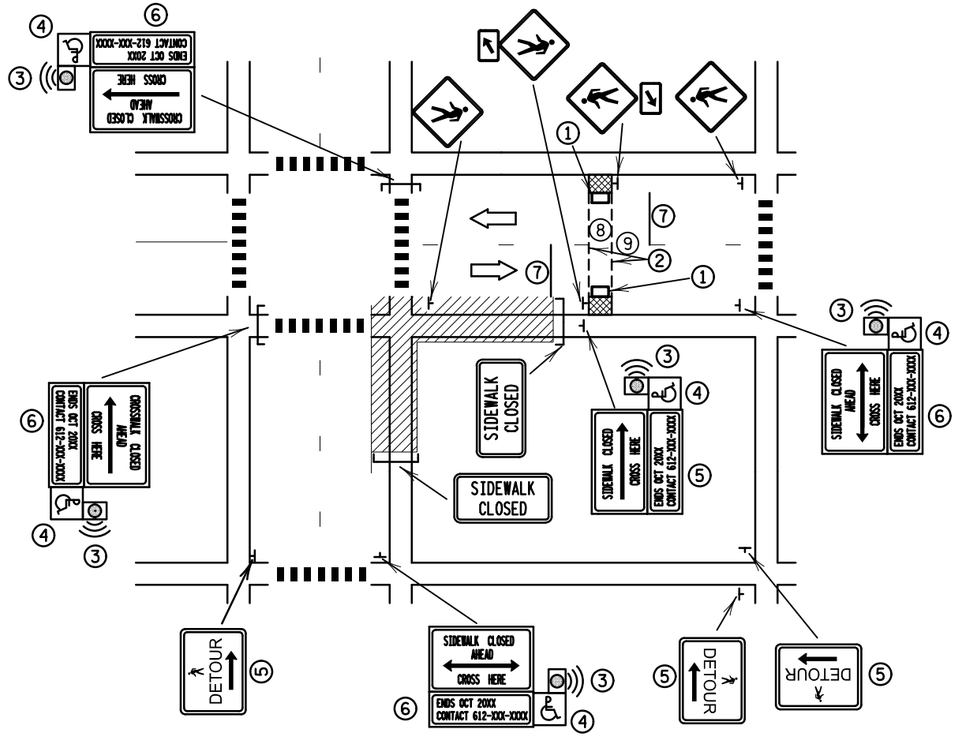
LEAD EXPERT OFFICE: BRIAN SORENSON, STATE TRAFFIC ENGINEER, OFFICE OF TRAFFIC ENGINEERING		ALTERNATE PEDESTRIAN ROUTE (APR) LAYOUTS	APPROVED: 03-18-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.811	1 OF 2
DEPARTMENT OF TRANSPORTATION		STANDARD PLAN	SAP 027-651-011, SAP 027-619-029 SAP 027-594-005	SHEET NO.	66	
			CSAH 51	TOTAL SHEETS	336	



OTHER SIDE OF ROADWAY DETOUR
FOR MID-BLOCK CLOSURE



ONE QUADRANT CLOSED



OTHER SIDE OF STREET DETOUR OR DETOUR WITH TRAILBLAZING SIGNS
FOR CORNER SIDEWALK CLOSURE WITH OPTIONAL TEMPORARY CROSSWALK

NOTES:

WHEN CLOSING OR RELOCATING CROSSWALKS OR SIDEWALKS, PROVIDE DETECTABLE TEMPORARY FACILITIES AND INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH EXISTING PEDESTRIAN FACILITIES. THE MINIMUM TEMPORARY WALKWAY WIDTH SHOULD BE THE WIDTH OF THE EXISTING FACILITY. IF THE EXISTING FACILITY HAS A WIDTH GREATER THAN 60", THE WIDTH OF THE TEMPORARY FACILITY MAY BE 60". IF THE WIDTH OF THE DETOUR IS LESS THAN 60", A 60"-WIDE PASSING SPACE IS REQUIRED EVERY 200'.

TEMPORARY TRAFFIC CONTROL DEVICES FOR PEDESTRIANS ARE SHOWN. OTHER TRAILBLAZING SIGNS OR DEVICES MAY BE NEEDED FOR ADEQUATE ROUTING. STAGE WORK AS NECESSARY TO PROVIDE AN ALTERNATE PEDESTRIAN ROUTE (APR) AT ALL TIMES.

PROVIDE A SMOOTH, CONTINUOUS, HARD SURFACE THROUGH THE LENGTH OF THE APR. PROVIDE A FIRM, STABLE, FREE-DRAINING, NON-SLIP, TEMPORARY WALKWAY SURFACE REGARDLESS OF WEATHER CONDITIONS. SUPPORT THE TEMPORARY WALKWAY SURFACE WITH A SOLID BASE TO COVER SHORT SEGMENTS OF ROUGH, SOFT, OR UNEVEN GROUND. THE TEMPORARY WALKWAY SURFACE WILL ALLOW NORMAL USAGE OF WHEELCHAIRS, WALKERS, STROLLERS, AND OTHER MOBILITY DEVICES. CONCRETE, BITUMINOUS, STEEL, RUBBER, WOOD (3/4" OR THICKER), AND PLASTIC ARE ACCEPTABLE SURFACE MATERIALS FOR THE TEMPORARY WALKWAY SURFACE. GRAVEL, MILLINGS, OR OTHER UNEVEN SURFACES ARE NOT ACCEPTABLE SURFACE MATERIALS. IF NEEDED, PROVIDE SOIL STABILIZATION TO PREVENT EROSION AROUND TEMPORARY SURFACES.

COVER OR DEACTIVATE ANY PEDESTRIAN TRAFFIC SIGNALS CONTROLLING CLOSED CROSSWALKS.

APR SHOULD BE KEPT FREE OF TRASH, SEDIMENT, AND DEBRIS.

POST-MOUNTED SIGNS ADJACENT TO SIDEWALKS SHALL HAVE 7' MINIMUM CLEARANCE FROM THE BOTTOM OF THE LOWEST SIGN TO THE SIDEWALK SURFACE. SHARED-USE PATHS SHALL HAVE 8' MINIMUM CLEARANCE FROM THE BOTTOM OF THE LOWEST SIGN TO THE SHARED-USE PATH SURFACE.

ANY PORTABLE SIGN OR BARRICADE PLACED OR STORED IN A PEDESTRIAN WALKWAY THAT COULD BE A HAZARD TO A VISUALLY-IMPAIRED PEDESTRIAN SHALL HAVE A DETECTABLE EDGE TO GUIDE THE PEDESTRIAN AROUND THE HAZARD. FOR ADDITIONAL GUIDANCE SEE THE "TEMPORARY PEDESTRIAN ACCESS ROUTE (TPAR) DEVICES" STANDARD PLAN, "DETECTABLE EDGE FOR SIGN ON PORTABLE STAND" DETAIL.

MINIMIZE DISRUPTION TO PEDESTRIANS TO THE MAXIMUM EXTENT FEASIBLE BY PROVIDING AN APR IN THE FOLLOWING ORDER OF PREFERENCE:

1. PROVIDE THE APR ON THE SAME SIDE OF THE ROADWAY AS THE DISRUPTED ROUTE UTILIZING BYPASSES.
2. WHERE IT IS NOT FEASIBLE TO PROVIDE A SAME-SIDE APR, PROVIDE AN APR DETOUR ON THE OTHER SIDE OF THE ROADWAY.
3. WHERE IT IS NOT FEASIBLE TO PROVIDE AN APR ON EITHER SIDE OF THE ROADWAY, PROVIDE AN APR DETOUR WITH TRAILBLAZING SIGNS.

① TEMPORARY CURB RAMPS WITH DETECTABLE WARNINGS.

② TEMPORARY PAVEMENT MARKINGS FOR CROSSWALKS MAY USE CROSSWALK BLOCKS, TWO TRANSVERSE LINES OR TWO STRIPS OF 18" PREFORMED MARKING MATERIAL TO FORM 36" WIDE CROSSWALK BLOCKS.

③ PROVIDE AN APPROVED AUDIBLE MESSAGE DEVICE OR TACTILE MESSAGE FOR PEDESTRIANS WITH VISUAL DISABILITIES.

④ FOR FULLY ACCESSIBLE WALKWAYS THROUGH WORKZONES, CONSIDER DISPLAYING THE INTERNATIONAL SYMBOL OF ACCESSIBILITY.

⑤ USE PEDESTRIAN DETOUR TRAILBLAZING SIGNS IF THE PEDESTRIAN DETOUR IS NOT LOCATED ACROSS THE ROADWAY FROM THE SIDEWALK CLOSURE.

⑥ TYPICAL SIGN MESSAGE FOR AN ALTERNATE PEDESTRIAN ROUTE SHOULD INCLUDE INFORMATION SUCH AS THE DURATION OF THE WALKWAY RESTRICTIONS (BEGINNING AND/OR END DATES) AND A PROJECT CONTACT NUMBER FOR 24/7 QUESTIONS OR REPORTING HAZARDS. TYPICAL INFORMATION INCLUDED IN AN AUDIBLE MESSAGE CAN BE FOUND IN "TPAR - AUDIBLE MESSAGE CONTENT GUIDELINES" AVAILABLE ON THE MNDOT TRAFFIC ENGINEERING WEBSITE ON THE PEDESTRIAN ACCOMMODATIONS THROUGH WORK ZONES WEB PAGE. ADDITIONALLY, A SUMMARY OF THE MESSAGE CONTENT GUIDELINES CAN BE FOUND WITHIN THE PEDESTRIAN ACCOMMODATIONS THROUGH WORK ZONES DESIGN GUIDANCE DOCUMENT.

⑦ LOCATE STOP BAR 20' TO 50' BEFORE THE CROSSWALK. RESTRICT PARKING BETWEEN THE STOP BAR AND THE CROSSWALK. ON TWO-WAY ROADWAYS, RESTRICT PARKING BOTH BEFORE AND AFTER THE CROSSWALK FOR BOTH DIRECTIONS.

⑧ CONSIDER LIGHTING AT MID-BLOCK CROSSINGS IN ORDER TO ILLUMINATE PEDESTRIANS, IF NOT ALREADY LIT.

⑨ CONSIDER THE ADDITION OF R1-6a SIGNS AS MOTORISTS ARE NOT EXPECTING MID-BLOCK CROSSING.

R1-6a

LEGEND

- SIGN
- WORK AREA
- SIDEWALK BARRICADE
- DIRECTION OF TRAFFIC
- AUDIBLE MESSAGE DEVICE (AMD)
- TEMPORARY CURB RAMP WITH DETECTABLE EDGES

LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING		ALTERNATE PEDESTRIAN ROUTE (APR) LAYOUTS	APPROVED: 03-18-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.811	2 OF 2

DEPARTMENT OF TRANSPORTATION

STANDARD PLAN

SAP 027-651-011, SAP 027-619-029
SAP 027-594-005

CSAH 51

SHEET NO. 67

TOTAL SHEETS 336

NOTES;

TPAR SHOULD BE KEPT FREE OF TRASH, SEDIMENT, AND DEBRIS.

RAILINGS OR OTHER OBJECTS MAY PROTRUDE A MAXIMUM OF 4" INTO THE WALKWAY CLEAR SPACE WHEN LOCATED A MINIMUM OF 27" ABOVE THE WALKWAY SURFACE.

USE CRASHWORTHY TEMPORARY BARRIERS WHEN USED AS A PEDESTRIAN CHANNELIZERS.

PLACE SIDEWALK BARRICADES ACROSS THE ENTIRE WIDTH OF THE WALKWAYSURFACE, WHEN USED.

USE INTERLOCKING DEVICES TO CHANNELIZE PEDESTRIAN FLOW TO PREVENT GAPS THAT COULD ALLOW PEDESTRIANS TO STRAY FROM THE CHANNELIZED PATH.

① PROVIDE DETECTABLE EDGE TO ANY TRIPPING HAZARD IN THE WALKWAY. LOCATE BALLAST BEHIND THE DETECTABLE EDGE OR INTEGRAL TO THE DEVICE. ANY SUPPORT ON THE FRONT OF THE DEVICE SHOULD NOT EXTEND INTO THE 48" MINIMUM WALKWAY CLEAR SPACE. ANY SUPPORT THAT EXTENDS INTO THE WALKWAY SHALL NOT EXCEED ½" HEIGHT ABOVE THE WALKWAY SURFACE; IF GREATER THAN ¼", BEVEL AS SHOWN IN THE TRIP HAZARD DETAIL.

② PROVIDE CONTINUOUS DETECTABLE EDGES EXTENDING AT LEAST 6" ABOVE THE WALKWAY SURFACE. MARK DETECTABLE EDGES WITH A COLOR THAT CONTRASTS WITH THE WALKWAY SURFACE. PLACE THE DETECTABLE EDGE AROUND ANY PORTABLE SIGN STAND IN THE WALKWAY AREA WHERE THE SIGN POSES A HAZARD TO A VISUALLY-IMPAIRED PEDESTRIAN.

③ DEVICES AND DETECTABLE EDGES SHALL NOT BLOCK WATER DRAINAGE FROM THE WALKWAY. A GAP HEIGHT OR OPENING FROM THE WALKWAY SURFACE UP TO A MAXIMUM OF 2" IS ALLOWED FOR DRAINAGE PURPOSES.

④ USE HAND AND GUIDE RAILS WHEN REQUIRED. INSTALL TOP RAIL OR TOP SURFACE IN A VERTICAL PLANE PERPENDICULAR TO THE WALKWAY, ABOVE THE DETECTABLE EDGE. PROVIDE CONTINUOUS RAIL AT A HEIGHT OF 34" TO 38" ABOVE THE WALKWAY SURFACE. USE RAIL SUPPORTS THAT MINIMIZE CONTACT WITH PEDESTRIAN'S HANDS AND FINGERS. SEE "PUBLIC RIGHTS OF WAY ACCESSIBILITY GUIDELINES (PROWAG) 2005" FOR ADDITIONAL GUIDANCE ON USE OF HAND AND GUIDE RAILS.

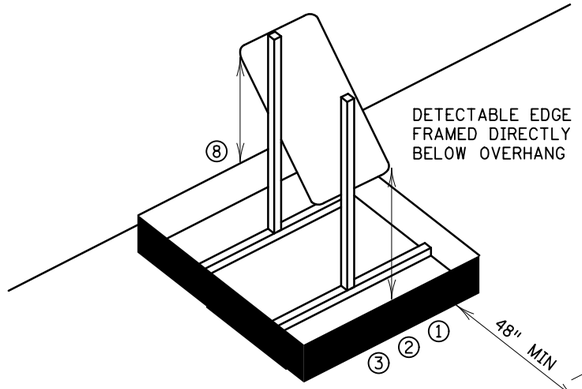
⑤ USE DEVICES FREE OF SHARP OR ROUGH EDGES, AND USE ROUNDED FASTENERS (BOLTS) TO PREVENT HARM TO A PEDESTRIAN'S HANDS, ARMS, AND CLOTHING.

⑥ REGARDLESS OF WEATHER CONDITIONS PROVIDE FIRM, STABLE, FREE-DRAINING, AND NON-SLIP TEMPORARY WALKWAY SURFACES. TEMPORARY WALKWAY SURFACES SHALL ALLOW NORMAL USAGE OF WHEELCHAIRS, WALKERS, STROLLERS, OR OTHER MOBILITY DEVICES. CONCRETE, BITUMINOUS, STEEL, RUBBER, WOOD (¾" OR THICKER), AND PLASTIC ARE ACCEPTABLE SURFACE MATERIALS FOR A TEMPORARY WALKWAY SURFACE. GRAVEL, MILLINGS, AND OTHER UNEVEN SURFACES ARE NOT ACCEPTABLE SURFACE MATERIALS.

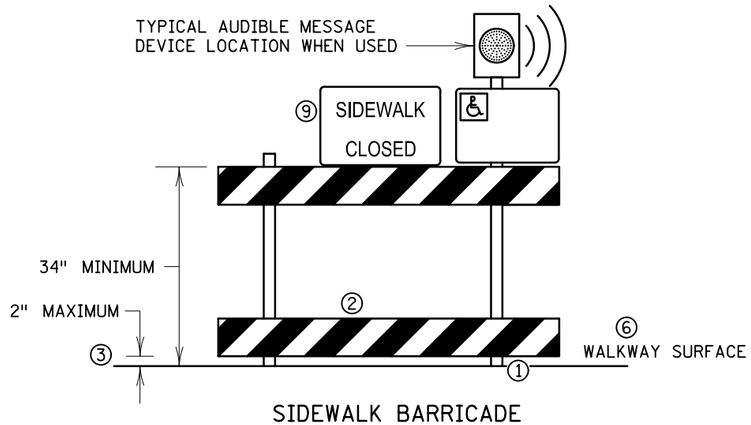
⑦ PROVIDE 32" HIGH OR GREATER LONGITUDINAL CHANNELIZING DEVICES FOR PEDESTRIANS.

⑧ AN EDGE OF THE FRAMING MAY BE REMOVED IF IT IS NOT NEEDED FOR PEDESTRIAN GUIDANCE. STABILITY OF THE DETECTABLE EDGE SHOULD BE MAINTAINED.

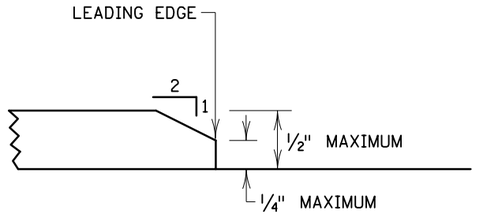
⑨ TYPICAL. SEE SIGNING PLAN FOR DETAILS.



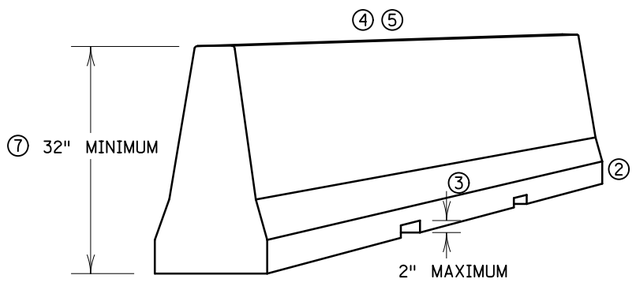
DETECTABLE EDGE FOR SIGN ON PORTABLE STAND



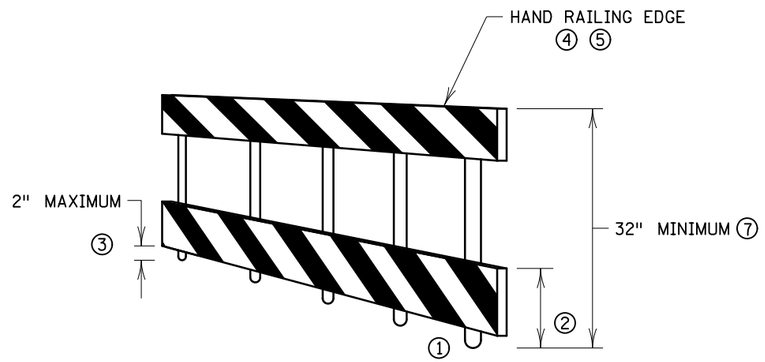
SIDEWALK BARRICADE



TRIP HAZARD



PEDESTRIAN CHANNELIZER DEVICE USING A PORTABLE CONCRETE BARRIER



PEDESTRIAN CHANNELIZER

LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING		TEMPORARY PEDESTRIAN ACCESS ROUTE (TPAR) DEVICES CHANNELIZERS, SIDEWALK BARRICADES, AND PORTABLE STANDS	APPROVED: 03-18-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.813	1 OF 2
	DEPARTMENT OF TRANSPORTATION		STANDARD PLAN	SAP 027-651-011, SAP 027-619-029 SAP 027-594-005 CSAH 51		SHEET NO. 68 TOTAL SHEETS 336	

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PLOTTED/REVISED: 9/30/2025

NOTES:

CONSTRUCT SLOPES AS INDICATED OR FLATTER, BUT NOT STEEPER.

TPAR SHOULD BE KEPT FREE OF TRASH, SEDIMENT, AND DEBRIS.

① CONSTRUCT CURB RAMPS AT LEAST 48" WIDE WITH A FIRM, STABLE, AND SLIP-RESISTANT SURFACE.

② PLACE PROTECTIVE EDGING WITH A 2" MINIMUM HEIGHT WHEN A CURB RAMP OR LANDING PLATFORM HAS A VERTICAL DROP OF 6" OR GREATER OR HAS A SIDE APRON SLOPE STEEPER THAN 1V:3H. CONSIDER PROTECTIVE EDGING WHEN CURB RAMPS OR LANDING PLATFORMS HAVE A VERTICAL DROP OF 3" OR MORE.

③ PLACE DETECTABLE EDGING WITH 6" MINIMUM HEIGHT AND CONTRASTING COLOR ON ALL CURB RAMP LANDINGS WHERE THE WALKWAY CHANGES DIRECTION.

④ CONSTRUCT CURB RAMPS AND LANDINGS WITH A 2% OR FLATTER CROSS SLOPE.

⑤ PROVIDE A CLEAR SPACE OF AT LEAST 48" X 48" ABOVE AND BELOW THE CURB RAMP.

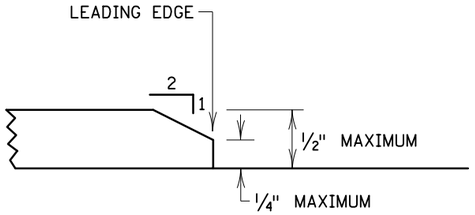
⑥ MARK THE CURB RAMP WALKWAY EDGE WITH A 2" TO 4" WIDE MARKING OF CONTRASTING COLOR. THE MARKING IS OPTIONAL WHERE COLOR-CONTRASTING EDGING IS USED.

⑦ DO NOT IMPEDE WATER FLOW IN THE GUTTER SYSTEM.

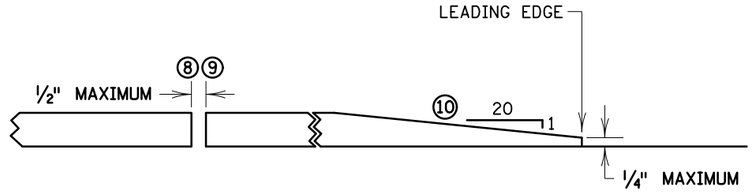
⑧ NO LATERAL JOINTS OR GAPS BETWEEN SURFACES SHALL EXCEED ½" WIDTH.

⑨ CHANGES BETWEEN SURFACE HEIGHTS SHALL NOT EXCEED ½". USE VERTICAL LATERAL EDGES UP TO ¼" HIGH, AND BEVELED AT 1V:2H FOR LATERAL EDGES BETWEEN ¼" AND ½" HEIGHT.

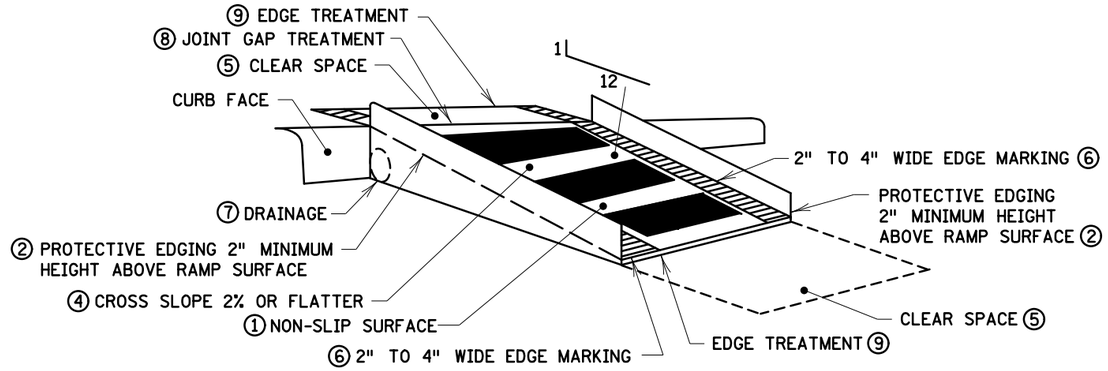
⑩ BEVEL THE EDGE OF TEMPORARY WALKWAY SURFACES ½" OR THINNER AT 1V:2H. FOR THICKER WALKWAY SURFACE BEVEL EDGE 1V:20H OR FLATTER.



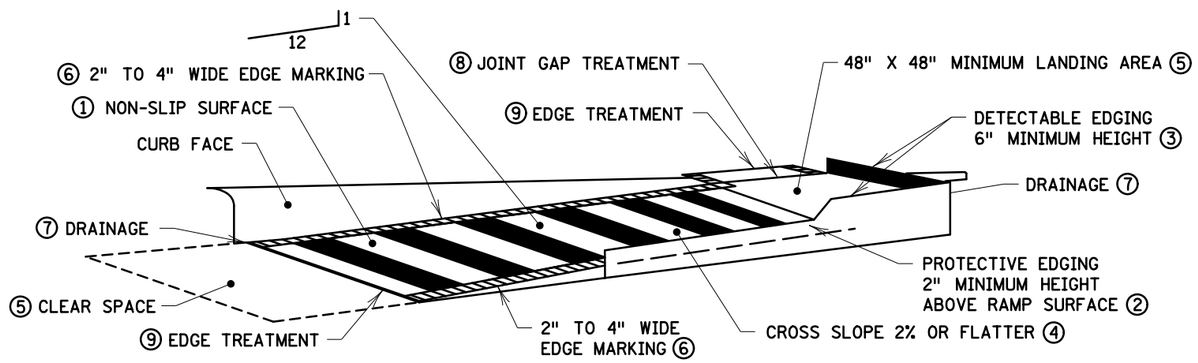
EDGE TREATMENT ⑨



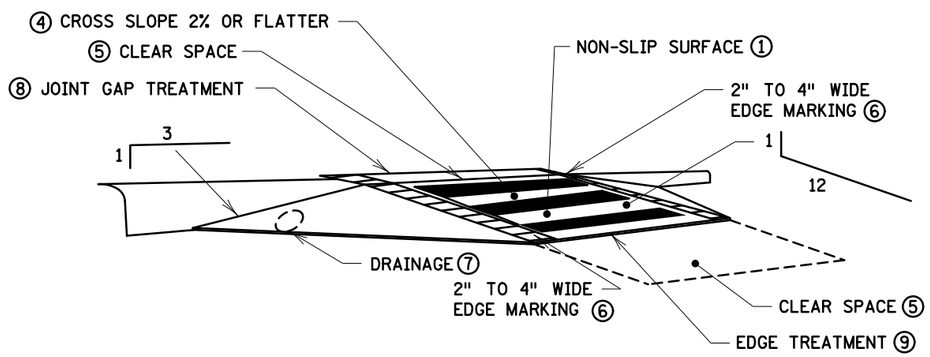
TEMPORARY WALKWAY SURFACE



TEMPORARY CURB RAMP PERPENDICULAR TO CURB
SHOWN WITH PROTECTIVE EDGE



TEMPORARY CURB RAMP
PARALLEL TO CURB



TEMPORARY CURB RAMP PERPENDICULAR TO CURB
SHOWN WITH SIDE APRON

LEAD EXPERT OFFICE: BRIAN SORENSON, STATE TRAFFIC ENGINEER, OFFICE OF TRAFFIC ENGINEERING		TEMPORARY PEDESTRIAN ACCESS ROUTE (TPAR) DEVICES TEMPORARY CURB RAMPS AND WALKWAY SURFACES	APPROVED: 03-18-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.813	2 OF 2
DEPARTMENT OF TRANSPORTATION		STANDARD PLAN	SAP 027-651-011, SAP 027-619-029 SAP 027-594-005	SHEET NO.	69	
			CSAH 51	TOTAL SHEETS	336	

PLOTTED/REVISED: 9/30/2025
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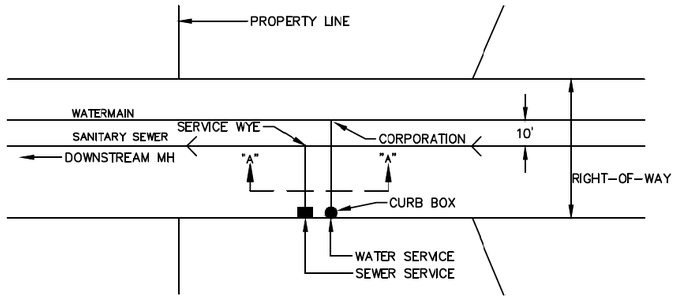
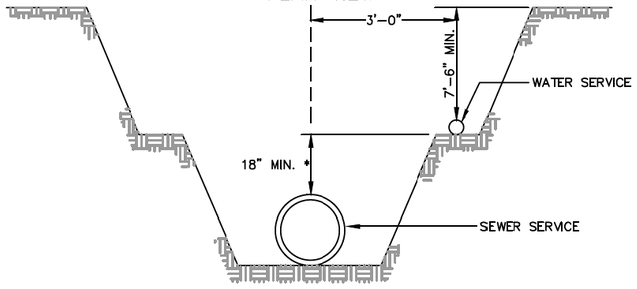


SANITARY SEWER AND WATERMAIN SERVICE SIZE AND TYPE SHALL COMPLY WITH BID PROPOSAL ITEMS.

PLAN VIEW

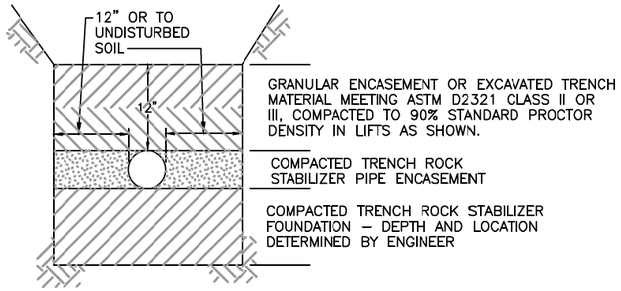


* X,Y,Z COORDINATES FOR WYES AND CORPS

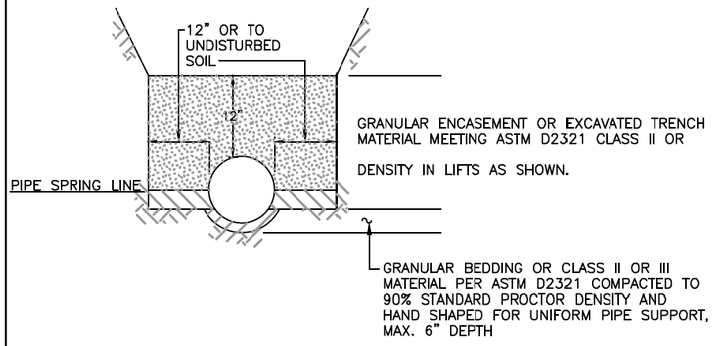
SECTION A-A

* IF 18 INCHES OF VERTICAL SEPARATION CANNOT BE MAINTAINED, 10 FEET OF HORIZONTAL SEPARATION IS REQUIRED.

moore engineering, inc.	SEWER & WATER COMBINED SERVICE DETAIL	SP SPRING PARK	APPR: 1-22-07 REV: 1-15 SAN-1

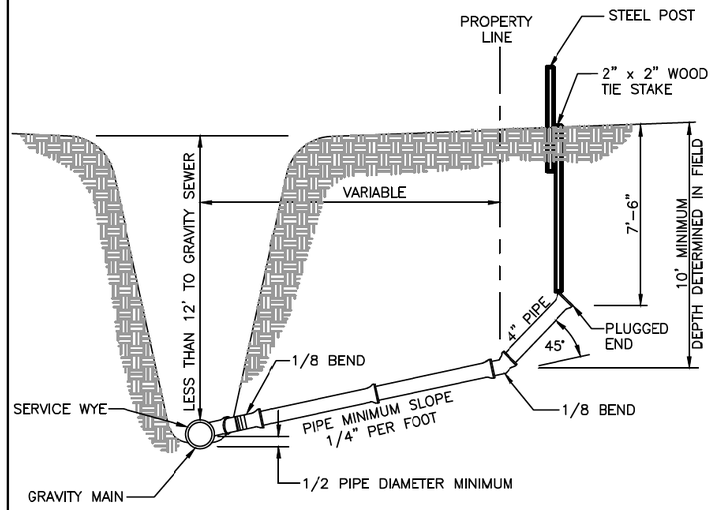


UNSTABLE TRENCH BOTTOM



STABLE TRENCH BOTTOM

moore engineering, inc.	TYPICAL BEDDING DETAILS FOR PVC PIPE	SP SPRING PARK	APPR: 1-22-07 REV: 1-15 SAN-2A



TYPE "A" SERVICES TO BE USED IN CONJUNCTION WITH PLASTIC PIPE SEWERMAIN AND CLAY SEWERMAINS WITH LESS THAN 12 FEET OF COVER. ALL SERVICE PIPE TO BE INSTALLED AND BEDDED IN ACCORDANCE WITH THE APPROPRIATE PIPE BEDDING DETAIL AS INDICATED IN THE PLANS/SPECIFICATIONS.

moore engineering, inc.	SANITARY SEWER SERVICE CONNECTION TYPE "A"	SP SPRING PARK	APPR: 1-22-07 REV: 1-15 SAN-3

Hennepin

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.

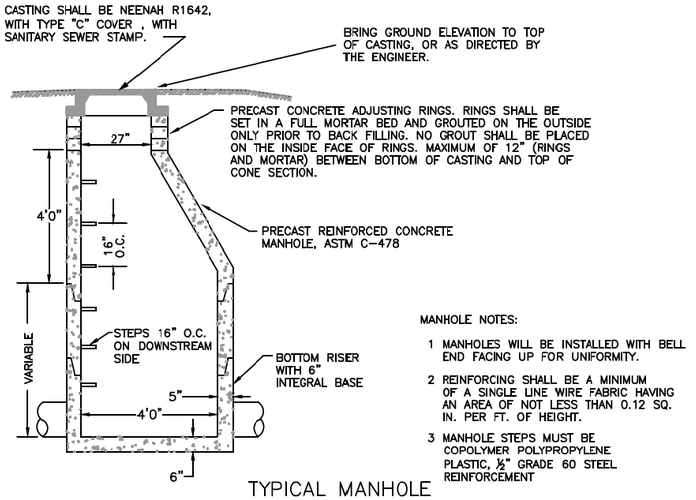
AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

DESIGN BY:	SPRING PARK
CAD BY:	R. MANKE
CHECKED BY:	S. PARK
LAST REVISION:	/ /

DETAILS AND STANDARD PLANS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 70 / 336



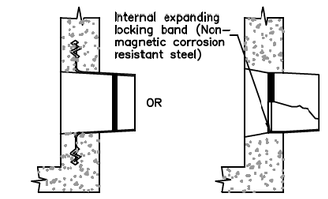
MANHOLE NOTES:

1 MANHOLES WILL BE INSTALLED WITH BELL END FACING UP FOR UNIFORMITY.

2 REINFORCING SHALL BE A MINIMUM OF A SINGLE LINE WIRE FABRIC HAVING AN AREA OF NOT LESS THAN 0.12 SQ. IN. PER FT. OF HEIGHT.

3 MANHOLE STEPS MUST BE COPOLYMER POLYPROPYLENE PLASTIC, ½" GRADE 60 STEEL REINFORCEMENT

TYPICAL MANHOLE



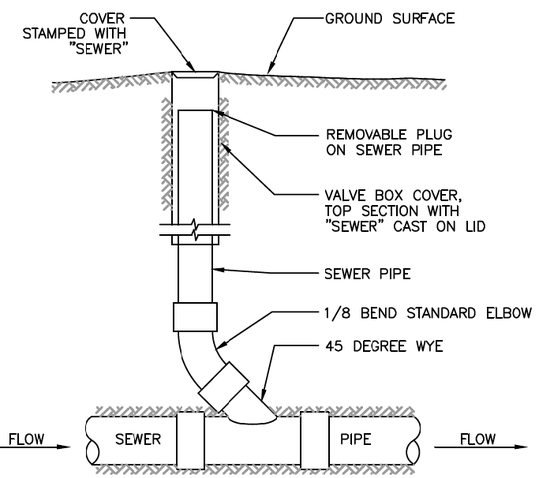
WATER TIGHT SEALS

SLEEVE NOTES:
1. Shim or adapter for "nonstandard pipe allowable.
2. Flexible sleeve shall be a neoprene material meeting the requirements of ASTM C-443 or the following Elastomer EPDM:

Tensile Strength	1500 P.S.I. min.	(Die C. ASTM D 412)
Elongation at Rupture	450% min.	(Die C. ASTM D 412)
Compression Set	25% max.	(22hrs. @70 C. ASTM D 395, Method B)
Durometer	50 ± 5	(ASTM D 2240)

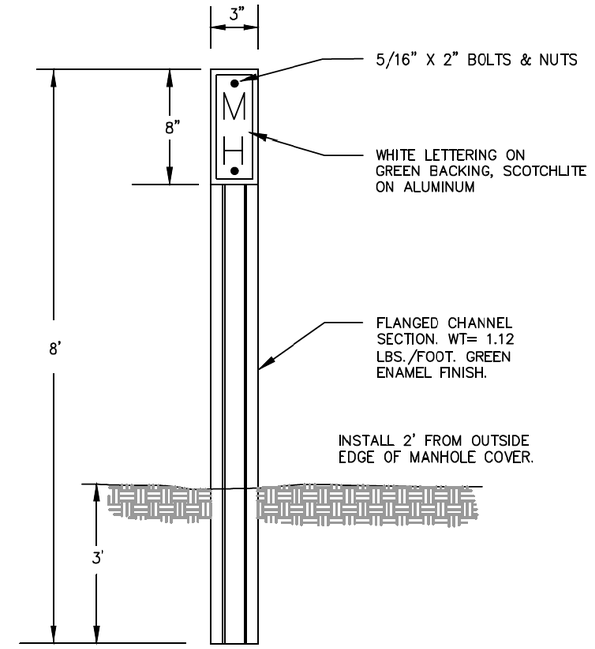
3. Flexible sleeve dimensions shall conform to producers standards.

moore engineering, inc.	STANDARD SANITARY MANHOLE	SPRING PARK	APPR: 1-22-07
			REV: 1-15
			SAN-5



- CLEANOUT REQUIRED EVERY 100 LF. BEYOND PROPERTY LINE RECOMMEND EVERY 50 LF.
- MATERIALS SCHEDULE 40 OR SDR26

moore engineering, inc.	TYPICAL CLEANOUT DETAIL	SPRING PARK	APPR: 1-22-07
			REV: 1-15
			SAN-10



moore engineering, inc.	MANHOLE MARKING SIGN	SPRING PARK	APPR: 1-22-07
			REV: 1-07
			SAN-17

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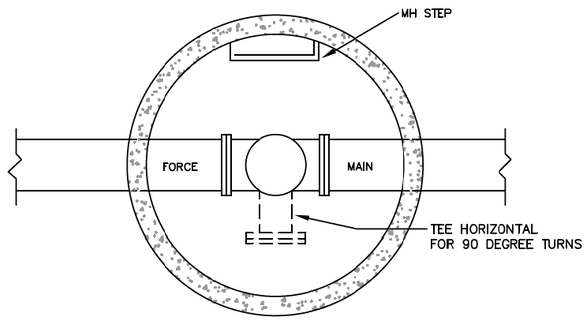
AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER — 49073 LICENSE NO. — / / DATE

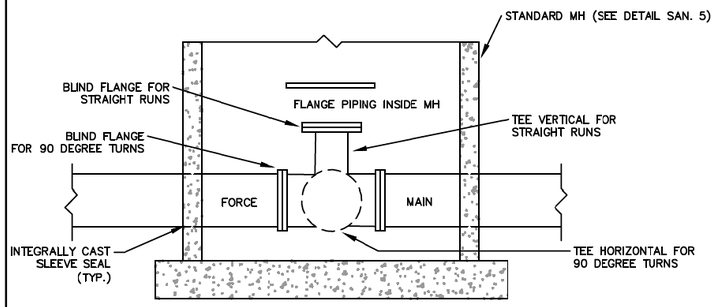
DESIGN BY:	SPRING PARK
CAD BY:	R. MANKE
CHECKED BY:	S. PARK
LAST REVISION:	/ /

DETAILS AND STANDARD PLANS

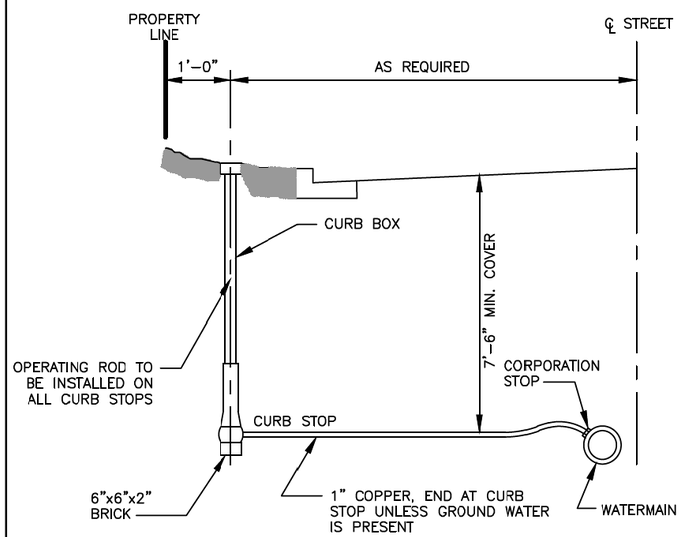
CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

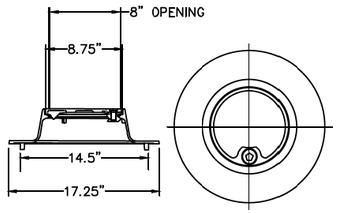
SHEET 71 / 336





moore engineering, inc.	FORCEMAIN CLEAN OUT MANHOLE	SPRING PARK	APPR: 1–22–07 REV: 1–15 SAN–16

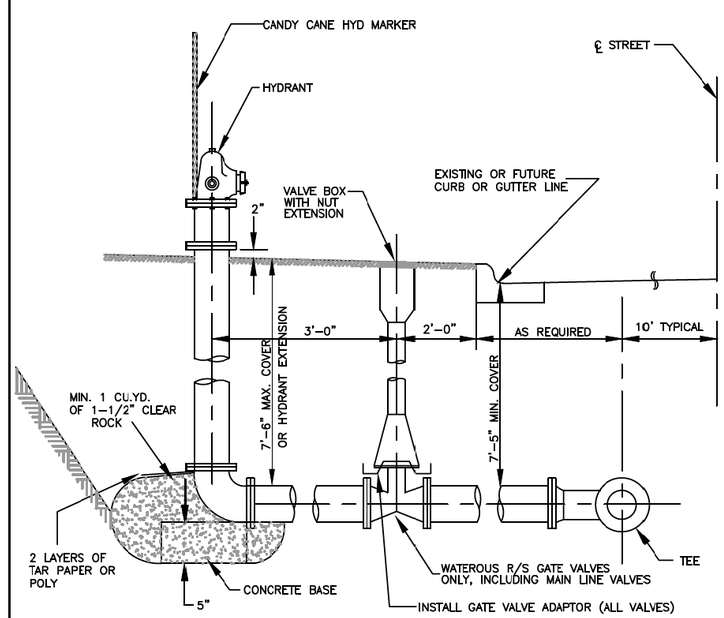




MCDONALD 74M1A SERIES
METER FRAME & COVER SHALL
BE USED IN PAVED AREAS

moore engineering, inc.	WATER SERVICE DETAIL	SPRING PARK	APPR: 1–22–07 REV: 1–15 WAT–1

NOTE
ALL WATERMAIN MUST BE ENCASED IN
POLYETHYLENE MATERIAL AND CONFORM
TO THE REQUIREMENTS OF AWWA C–105



NOTES:
1. MEGALUG ALL JOINTS, HYDRANT TO TEE
2. HYDRANT: WATEROUS PACER WB67; 8.5' BURY, STAINLESS STEEL BOLTS, EPOXY BASE, 16" BARREL SECTION.
3. COR–BLUE T–BOLTS SHALL BE USED ON ALL MECHANICAL JOINTS.
4. HYDRANTS, VALVES AND FITTINGS ARE TO BE RETAINED TO THE WATERMAIN WITH MEGALUGS. MEGALUGS SHALL HAVE COR–BLUE TWIST–OFF BOLTS.

moore engineering, inc.	HYDRANT DETAIL	SPRING PARK	APPR: 1–22–07 REV: 1–15 WAT–2

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER — 49073 LICENSE NO. — / / DATE

DESIGN BY: SPRING PARK
CAD BY: R. MANKE
CHECKED BY: S. PARK
LAST REVISION: / /

DETAILS AND STANDARD PLANS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 72 / 336

RESTRAINED PIPE LENGTHS

CLAY LL<50

PIPE SIZE	BEND SIZES 22.5°	45°
4"	5' (6')	10' (13')
6"	7' (9')	15' (19')
8"	10' (12')	20' (26')
10"	12' (15')	25' (32')
12"	14' (18')	30' (38')

SILT LL<50

PIPE SIZE	BEND SIZES 22.5°	45°
4"	3' (4')	6' (8')
6"	5' (5')	9' (11')
8"	6' (7')	12' (15')
10"	7' (9')	15' (19')
12"	9' (11')	18' (22')

SAND GRAVEL, SOME SILT

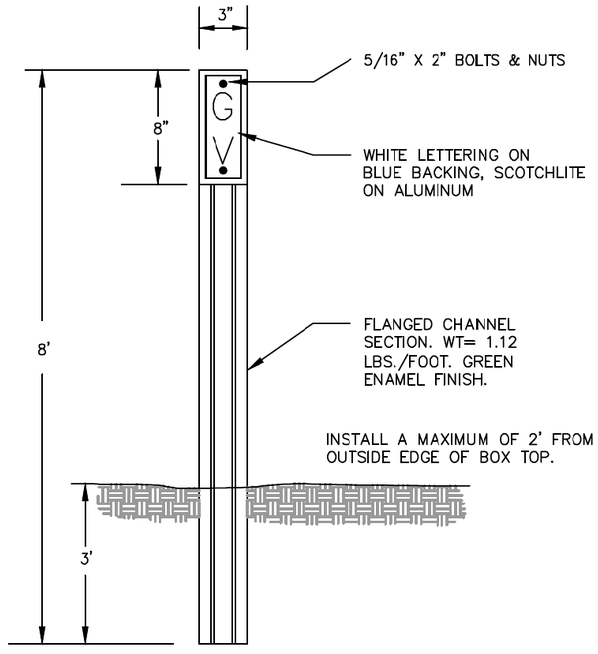
PIPE SIZE	BEND SIZES 22.5°	45°
4"	2' (2')	4' (5')
6"	3' (3')	6' (7')
8"	4' (4')	8' (9')
10"	5' (6')	10' (12')
12"	6' (7')	12' (14')

(14')– LENGTH FOR POLYETHYLENE WRAPPED PIPE
ALL LENGTHS IN FEET

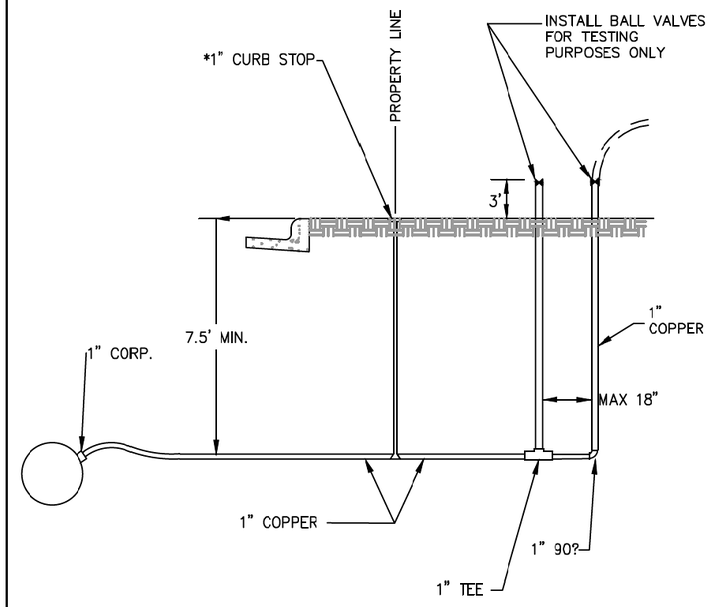
SAFETY FACTOR= 1.5
DESIGN PRESSURE= 150 PSI
TYPE 2 BEDDING
DEPTH OF BURIAL= 6 FT

DATA DERIVED FROM FORMULAS
THURST RESTRAINT DESIGN FOR DUCTILE IRON PIPE
SECOND EDITION, 1989, DUCTILE IRON
PIPE ASSOCIATION

moore engineering, inc. | JOINT RESTRAINT AND REACTION BRACING DETAIL | SPRING PARK | APPR: 1–22–07 | REV: 1–15 | WAT–4



moore engineering, inc. | WATER VALVE MARKING SIGN | SPRING PARK | APPR: 1–22–07 | REV: 1–15 | WAT–5



* INCLUDED IN 1" SPRINKLER SERVICE GROUP BID ITEM

SERVICE PIPE CAN BE 1 ½" COPPER OR 3" AND 4" DIP

moore engineering, inc. | SPRINKLER SERVICE DETAIL | SPRING PARK | APPR: 1–22–07 | REV: 1–15 | WAT–6

Hennepin

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.

AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

DESIGN BY: SPRING PARK
CAD BY: R. MANKE
CHECKED BY: S. PARK
LAST REVISION: / /

DETAILS AND STANDARD PLANS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

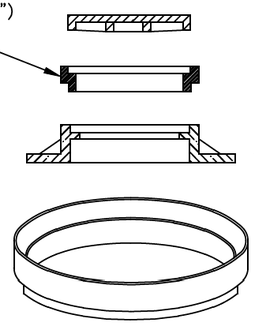
SHEET 73 / 336

NEENAH R–1733
MANHOLE FRAME (24")

ESS BROTHERS 307,
NEENAH NO. R–1979
D–1=2" RISE
D–2=2–1/2" RISE
D–3=3" RISE
OR APPROVED EQUAL

NEENAH R–1642B
MANHOLE FRAME (27")

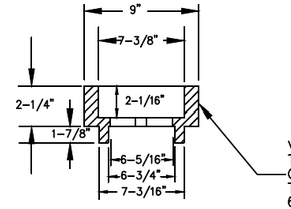
ESS BROTHERS 309,
NEENAH NO. R–1979
M–1=2" RISE
M–2=2–1/2" RISE
M–3=3" RISE
OR APPROVED EQUAL



NO 2–PIECE RINGS
WILL BE ALLOWED

ALL RISERS MUST BE GLUED IN PLACE WITH ESS BROTHERS RISER ADHESIVE OR APPROVED EQUAL.

TYPE A



VALVE BOX RISER TO FIT THE TYLER NO. 6850, 6855, 6860 OR 6865 TOP SECTION AND THE TYLER 6850–6855 OR 6860–6865 DROP COVER, OR APPROVED EQUAL.

moore engineering, inc.

RISERS FOR EXTENSION OF GATE VALVES AND MANHOLES

SP SPRING PARK

APPR: 11–2–09
REV: 1–15
WAT–7

Hennepin

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.

AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

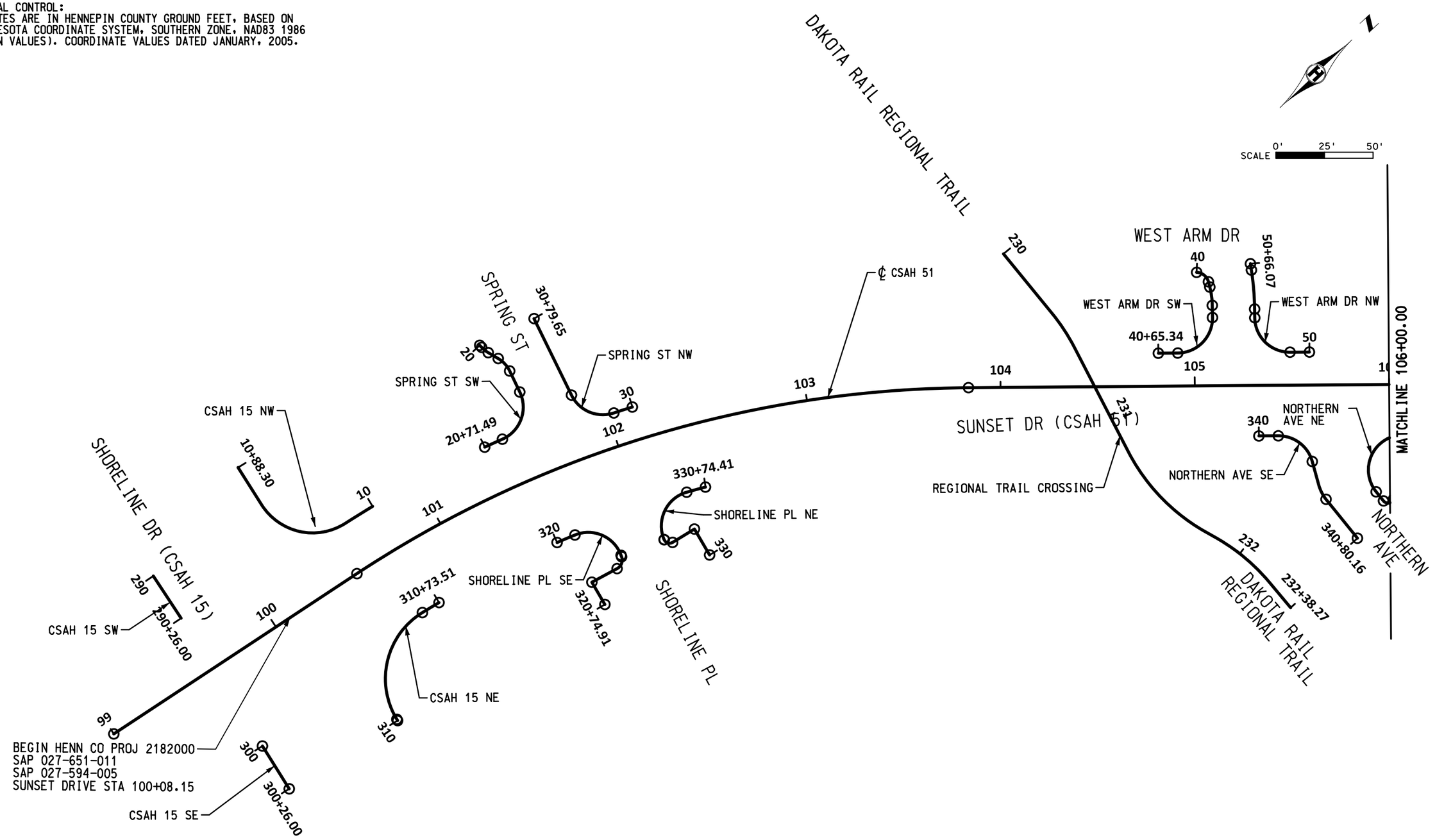
DESIGN BY:	SPRING PARK
CAD BY:	R. MANKE
CHECKED BY:	S. PARK
LAST REVISION:	/ /

DETAILS AND STANDARD PLANS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 74 / 336

HORIZONTAL CONTROL:
COORDINATES ARE IN HENNEPIN COUNTY GROUND FEET, BASED ON THE MINNESOTA COORDINATE SYSTEM, SOUTHERN ZONE, NAD83 1986 (NON-HARN VALUES). COORDINATE VALUES DATED JANUARY, 2005.



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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER — 49073 LICENSE NO. — / / DATE

DESIGN BY:	E. ITKONEN
CAD BY:	E. ITKONEN
CHECKED BY:	S. PARK
LAST REVISION:	/ /

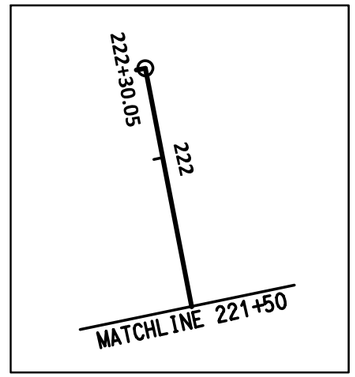
ALIGNMENT PLAN AND TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 75 / 336

LAKE MINNETONKA
WEST ARM

INSET A



SEE INSET A
MATCHLINE 221+50

SCALE 0' 25' 50'

ROCKVAM RD
221
ROCKVAM RD
ROCKVAM RD NW
ROCKVAM RD SW
60
70+22.74
70
60+22.95
210
MATCHLINE 113+00.00

MATCHLINE 106+00.00
106
107
¢ CSAH 51
108
109
110
111
112
SUNSET DR (CSAH 51)
350+69.08
NORTHERN AVE NE
350
360
371+15.34
371
MAPLETON AVE SE
MAPLETON AVE NE
MAPLETON AVE
361+14.45
370

SUNSET DRIVE STA 112+61.60 =
ROCKVAM RD STA 220+00.00

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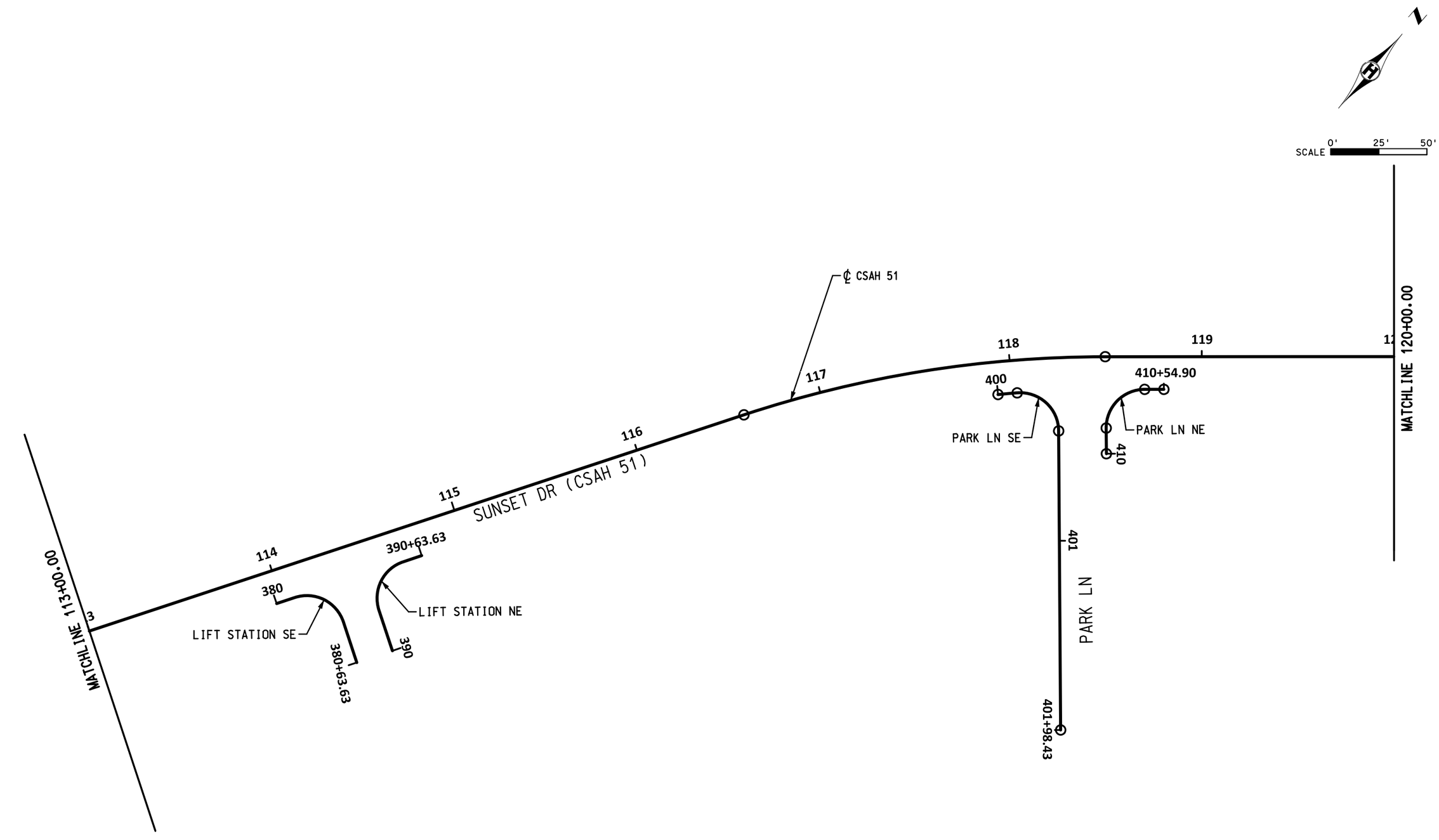
AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

DESIGN BY: E. ITKONEN
CAD BY: E. ITKONEN
CHECKED BY: S. PARK
LAST REVISION: / /

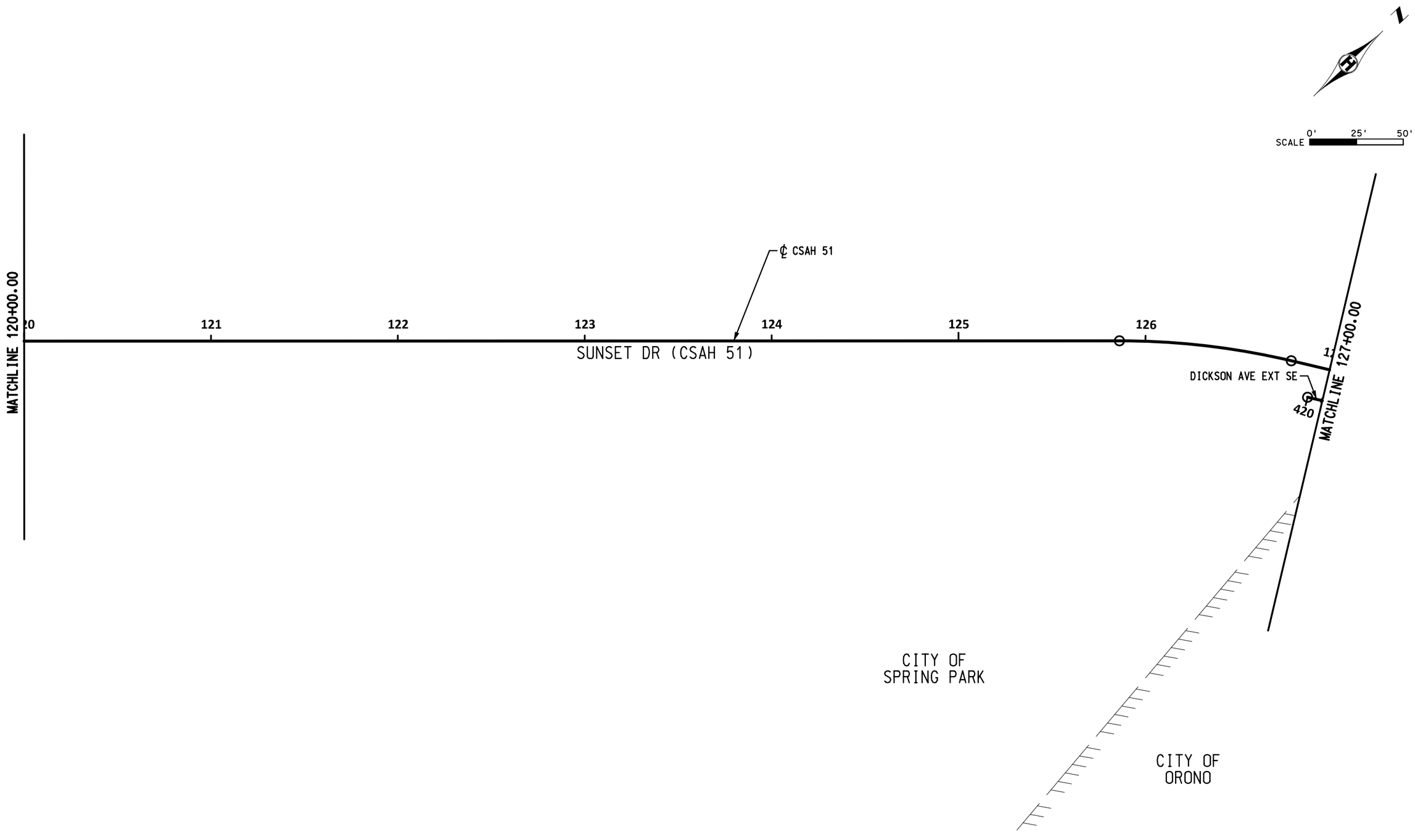
ALIGNMENT PLAN AND TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 76 / 336



Hennepin	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. AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER — 49073 LICENSE NO. — / / DATE	DESIGN BY: E. ITKONEN CAD BY: E. ITKONEN CHECKED BY: S. PARK LAST REVISION: / /	ALIGNMENT PLAN AND TABULATIONS CSAH 51 / HENNEPIN COUNTY PROJECT 2182000 SAP 027-651-011, SAP 027-619-029, SAP 027-594-005	SHEET 77 / 336



Hennepin

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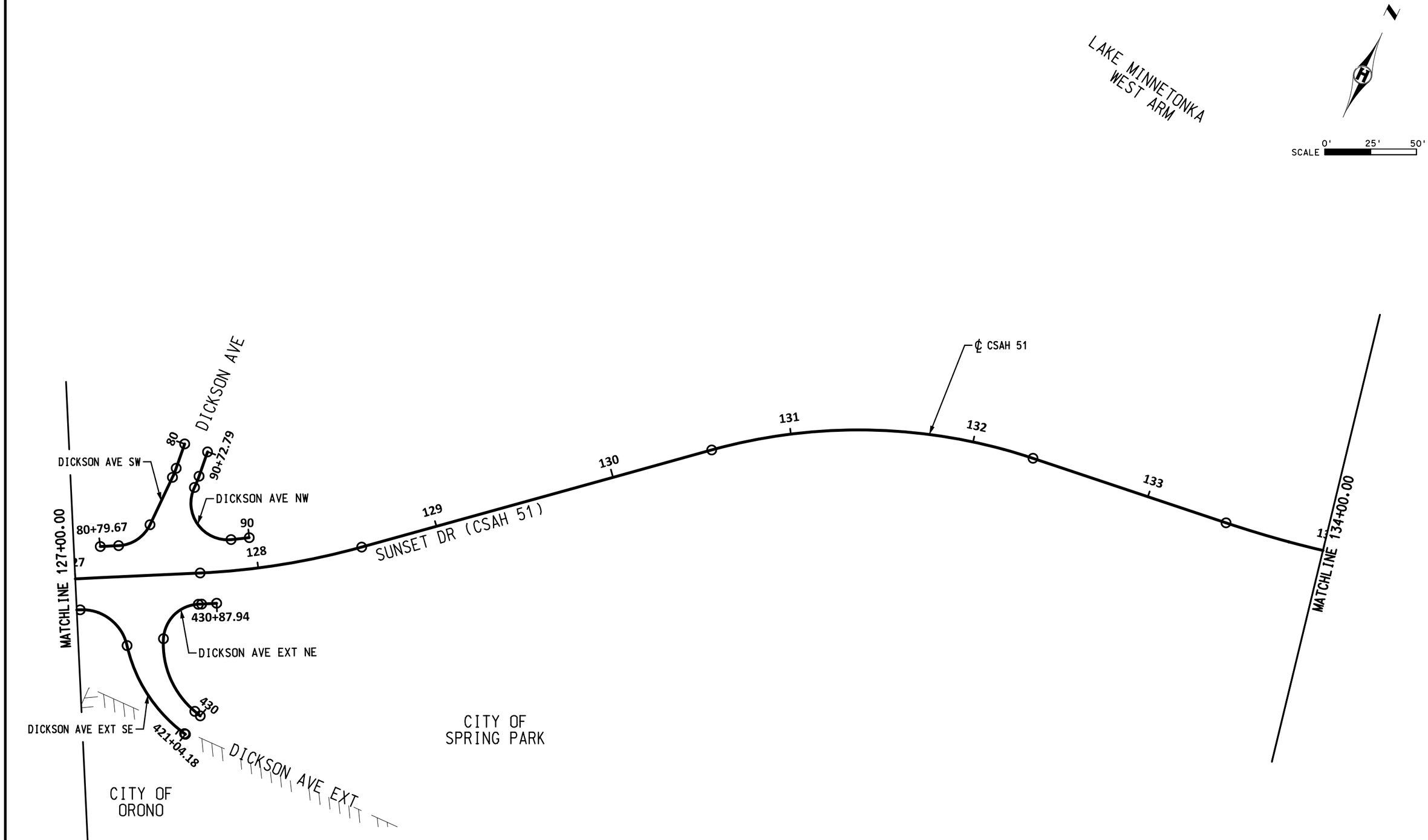
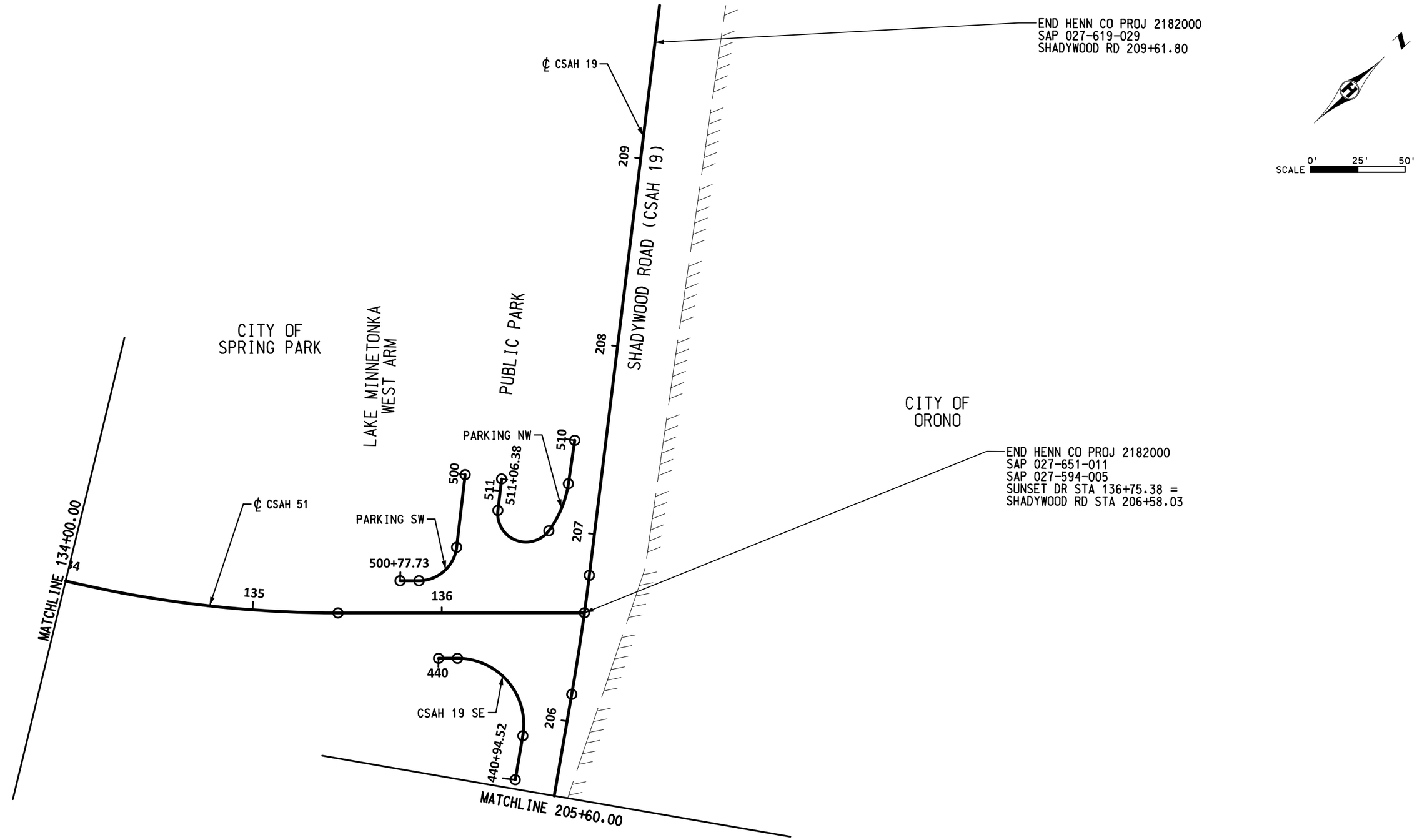
ALIGNMENT PLAN AND TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 78 / 336



Hennepin	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. AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER — 49073 LICENSE NO. — / / DATE	DESIGN BY: E. ITKONEN CAD BY: E. ITKONEN CHECKED BY: S. PARK LAST REVISION: / /	ALIGNMENT PLAN AND TABULATIONS CSAH 51 / HENNEPIN COUNTY PROJECT 2182000 SAP 027-651-011, SAP 027-619-029, SAP 027-594-005	SHEET 79 / 336



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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER — 49073 LICENSE NO. — / / DATE

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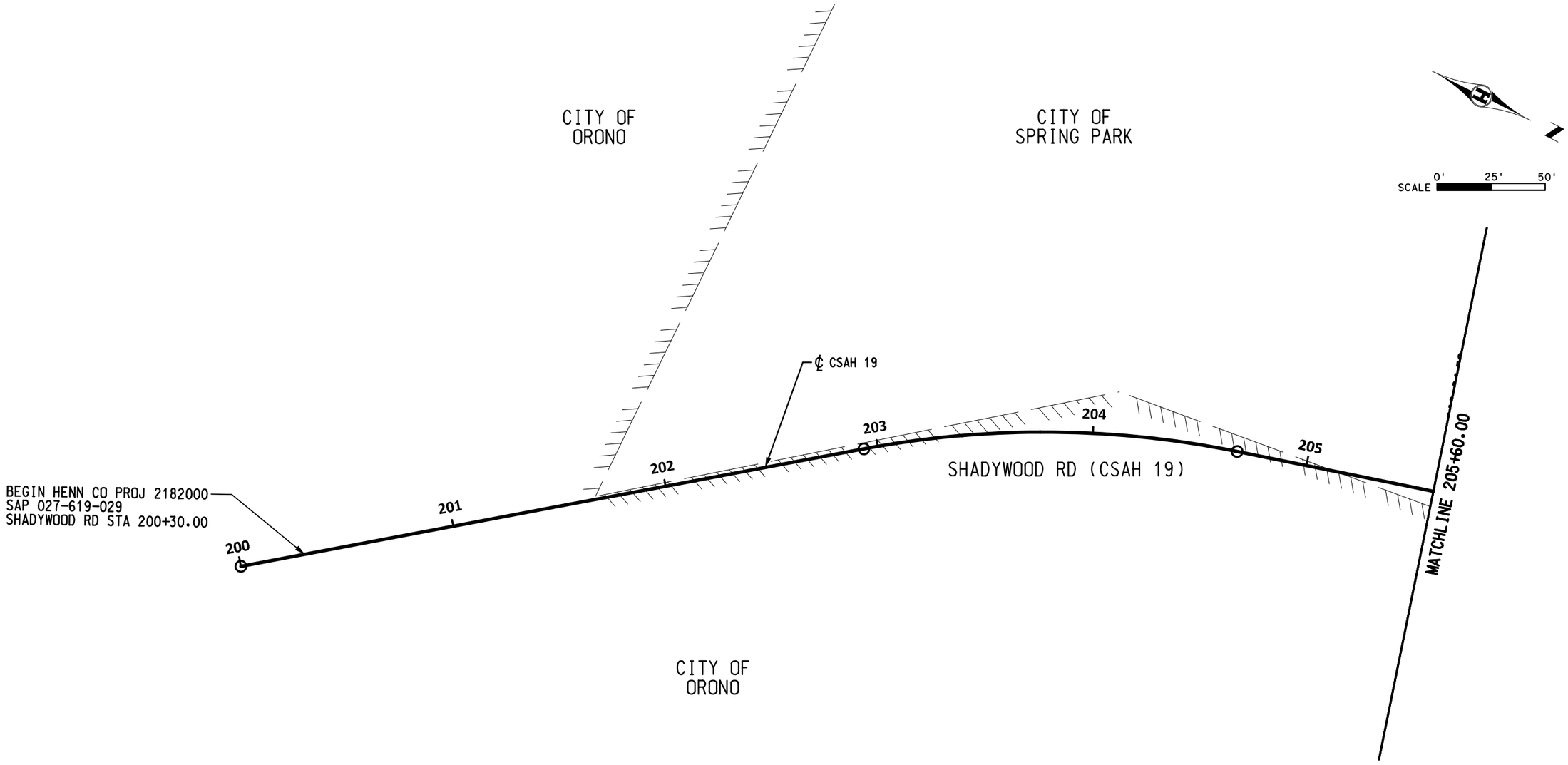
ALIGNMENT PLAN AND TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 80 / 336



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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER — 49073 LICENSE NO. — / / DATE

DESIGN BY:	E. ITKONEN
CAD BY:	E. ITKONEN
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LAST REVISION:	/ /

ALIGNMENT PLAN AND TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 81 / 336

ALIGNMENT NAME		CSAH 51					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
START	99+00.00	09°50'46.58"			149.90	152502.83	436975.62
PC	100+49.90					152650.51	437001.25
PC	100+49.90			580.00	333.60	152650.51	437001.25
CC	100+49.90		32°57'19.03"			152551.33	437572.71
PT	103+83.50					152945.42	437147.15
PT	103+83.50	42°48'05.62"			303.35	152945.42	437147.15
PC	106+86.84					153167.99	437353.27
PC	106+86.84			2000.00	15.17	153167.99	437353.27
CC	106+86.84		00°26'04.82"			151809.06	438820.69
PT	107+02.02					153179.08	437363.62
PT	107+02.02	43°14'10.44"			440.53	153179.08	437363.62
PC	111+42.55					153500.02	437665.38
PC	111+42.55			-400.00	85.41	153500.02	437665.38
CC	111+42.55		12°14'05.26"			153774.02	437373.97
PT	112+27.96					153568.00	437716.83
PT	112+27.96	31°00'05.18"			430.65	153568.00	437716.83
PC	116+58.61					153937.13	437938.64
PC	116+58.61			600.00	191.17	153937.13	437938.64
CC	116+58.61		18°15'20.94"			153628.09	438452.93
PT	118+49.78					154082.68	438061.33
PT	118+49.78	49°15'26.12"			736.34	154082.68	438061.33
PC	125+86.12					154563.27	438619.22
PC	125+86.12			400.00	92.77	154563.27	438619.22
CC	125+86.12		13°17'18.84"			154260.21	438880.29
PT	126+78.90					154615.16	438695.87
PT	126+78.90	62°32'44.95"			89.30	154615.16	438695.87
PC	127+68.20					154656.33	438775.12
PC	127+68.20			-400.00	89.47	154656.33	438775.12
CC	127+68.20		12°48'56.84"			155011.28	438590.70
PT	128+57.67					154706.08	438849.26
PT	128+57.67	49°43'48.11"			198.22	154706.08	438849.26
PC	130+55.89					154834.21	439000.50
PC	130+55.89			300.00	178.00	154834.21	439000.50
CC	130+55.89		33°59'43.09"			154605.30	439194.42
PT	132+33.89					154903.51	439161.63
PT	132+33.89	83°43'31.20"			111.08	154903.51	439161.63
PC	133+44.97					154915.65	439272.04
PC	133+44.97			-620.00	200.22	154915.65	439272.04
CC	133+44.97		18°30'08.78"			155531.93	439204.28
PT	135+45.18					154969.01	439464.12
PT	135+45.18	65°13'22.42"			130.19	154969.01	439464.12
END	136+75.38					155023.57	439582.33

ALIGNMENT NAME		CSAH 19					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
START	200+00.00	322°55'34.56"			293.46	154450.08	439884.87
PC	202+93.46					154684.22	439707.95
PC	202+93.46			450.00	173.83	154684.22	439707.95
CC	202+93.46		22°07'58.57"			154955.50	440066.99
PT	204+67.30					154839.48	439632.20
PT	204+67.30	345°03'33.12"			147.17	154839.48	439632.20
PC	206+14.47					154981.68	439594.26
PC	206+14.47			-1300.00	63.56	154981.68	439594.26
CC	206+14.47		02°48'04.69"			154646.51	438338.21
PT	206+78.03					155042.66	439576.38
PT	206+78.03	342°15'28.43"			387.32	155042.66	439576.38
① END	210+65.35					155411.56	439458.35

①ALIGNMENT POINT IS BEYOND PROJECT LIMITS AND IS NOT SHOWN ON SHEET 80

ALIGNMENT NAME		CSAH 15 SW					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
START	290+00.000	99?°56'29.90"			26.00	152573.30	436930.37
END	290+26.000					152568.81	436955.98

ALIGNMENT NAME		CSAH 15 SE					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
START	300+00.000	101?°10'30.85"			26.00	152554.29	437032.56
END	300+26.000					152549.25	437058.07

ALIGNMENT NAME		CSAH 15 NE					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
START	310+00.00	281°45'45.42"			0.77	152613.94	437070.69
PC	310+00.77					152614.09	437069.95
PC	310+00.77			40.00	62.75	152614.09	437069.95
CC	310+00.77		89°52'53.50"			152653.25	437078.10
PCC	310+63.51					152661.33	437038.92
PCC	310+63.51			545.00	10.00	152661.33	437038.92
CC	310+63.51		01°03'04.68"			152551.33	437572.71
PT	310+73.51					152671.10	437041.03

Hennepin

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

DESIGN BY:	E. ITKONEN
CAD BY:	E. ITKONEN
CHECKED BY:	S. PARK
LAST REVISION:	/ /

ALIGNMENT PLAN AND TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 82 / 336

ALIGNMENT NAME		CSAH15 NW					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
PC	10+00.00			-605.00	16.69	152680.07	436981.56
CC	10+00.00		01?°34'51.60"			152551.33	437572.71
PRC	10+16.69					152663.71	436978.24
PRC	10+16.69			31.00	48.83	152663.71	436978.24
CC	10+16.69		90?°15'18.00"			152669.47	436947.78
PT	10+65.52					152639.04	436941.88
PT	10+69.52	280?°57'37.89"			22.78	152639.04	436941.88
END	10+88.30					152643.37	436919.52

ALIGNMENT NAME		SPRING ST SW					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
START	20+00.00	90°26'38.88"			1.45	152777.07	436958.92
PC	20+01.45					152777.05	436960.37
PC	20+01.45			-15.00	4.37	152777.05	436960.37
CC	20+01.45		16°42'27.98"			152792.05	436960.48
PT	20+05.82					152777.65	436964.68
PT	20+05.82	73°44'10.90"			5.95	152777.65	436964.68
PC	20+11.77					152779.32	436970.40
PC	20+11.77			15.00	8.85	152779.32	436970.40
CC	20+11.77		33°47'21.61"			152764.92	436974.60
PT	20+20.62					152779.22	436979.11
PT	20+20.62	107°31'32.51"			12.01	152779.22	436979.11
PC	20+32.62					152775.61	436990.56
PC	20+32.62			18.00	28.87	152775.61	436990.56
CC	20+32.62		91°53'30.13"			152758.44	436985.14
PRC	20+61.49					152752.46	437002.12
PRC	20+61.49			-605.00	10.00	152752.46	437002.12
CC	20+61.49		00°56'49.34"			152551.33	437572.71
PT	20+71.49					152743	436998.87

ALIGNMENT NAME		SPRING ST NW					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
PC	30+00.00			-597.00	10.00	152812.53	437035.88
CC	30+00.00		00°57'35.02"			152551.33	437572.71
PRC	30+10.00					152803.50	437031.58
PRC	30+10.00			18.00	25.82	152803.50	437031.58
CC	30+10.00		82°11'03.57"			152811.10	437015.26
PT	30+35.82					152793.90	437009.95
PT	30+35.82	287°10'12.84"			43.83	152793.90	437009.95
END	30+79.65					152806.84	436968.07

ALIGNMENT NAME		SHORELINE PL SE					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
PC	320+00.00			545.00	10.00	152736.53	437060.14
CC	320+00.00		01°03'04.68"			152551.33	437572.71
PCC	320+10.00					152745.90	437063.62
PCC	320+10.00			18.00	28.97	152745.90	437063.62
CC	320+10.00		92°13'26.41"			152739.48	437080.44
PT	320+38.97					152756.03	437087.51
PT	320+38.97	113°08'27.77"			0.78	152756.03	437087.51
PC	320+39.75					152755.72	437088.23
PC	320+39.75			5.00	7.14	152755.72	437088.23
CC	320+39.75		81°47'29.16"			152751.13	437086.26
PT	320+46.89					152749.84	437091.09
PT	320+46.89	194°55'56.93"			14.75	152749.84	437091.09
HPI	320+61.64					152735.59	437087.29
HPI	320+61.64	102°51'15.29"			13.27	152735.59	437087.29
END	320+74.91					152732.63	437100.23

ALIGNMENT NAME		SHORELINE PL NE					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
START	330+00.00	282°51'51.34"			15.45	152789.34	437118.59
HPI	330+15.45					152792.78	437103.53
HPI	330+15.45	191°49'31.78"			13.17	152792.78	437103.53
PC	330+28.63					152779.89	437100.83
PC	330+28.63			3.00	5.14	152779.89	437100.83
CC	330+28.63		98°12'09.37"			152780.51	437097.89
PT	330+33.77					152777.69	437096.87
PT	330+33.77	290°01'41.15"			0.06	152777.69	437096.87
PC	330+33.83					152777.71	437096.81
PC	330+33.83			18.00	30.58	152777.71	437096.81
CC	330+33.83		97°21'10.90"			152794.62	437102.97
PCC	330+64.41					152802.90	437086.99
PCC	330+64.41			547.00	10.00	152802.90	437086.99
CC	330+64.41		01°02'50.84"			152551.33	437572.71
PT	330+74.41					152811.74	437091.67

Hennepin

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER | 49073 LICENSE NO. | / / DATE

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CAD BY: E. ITKONEN
CHECKED BY: S. PARK
LAST REVISION: / /

ALIGNMENT PLAN AND TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 83 / 336

ALIGNMENT NAME		DAKOTA RAIL TRAIL					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
START	230+00.00	94°00'08.61"			39.56	153005.71	437109.30
PC	230+39.56					153002.95	437148.76
PC	230+39.56			100.00	20.75	153002.95	437148.76
CC	230+39.56		11°53'24.06"			152903.19	437141.78
PT	230+60.31					152999.37	437169.16
PT	230+60.31	105°53'32.67"			60.70	152999.37	437169.16
PC	231+21.01					152982.75	437227.54
PC	231+21.01			-100.00	57.37	152982.75	437227.54
CC	231+21.01		32°52'09.36"			153078.92	437254.92
PT	231+78.37					152983.28	437284.12
PT	231+78.37	73°01'23.30"			7.36	152983.28	437284.12
PC	231+85.74					152985.43	437291.17
PC	231+85.74			100.00	35.44	152985.43	437291.17
CC	231+85.74		20°18'21.51"			152889.79	437320.36
PT	232+21.18					152989.62	437326.17
PT	232+21.18	93°19'44.82"			17.09	152989.62	437326.17
END	232+38.27					152988.63	437343.23

ALIGNMENT NAME		WEST ARM DR SW					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
START	40+00.00	51°21'03.07"			0.52	153071.98	437184.09
PC	40+00.52					153072.30	437184.50
PC	40+00.52			6.50	7.64	153072.30	437184.50
CC	40+00.52		67°19'35.81"			153067.23	437188.56
PT	40+08.16					153072.93	437191.68
PT	40+08.16	118°40'38.88"			3.22	153072.93	437191.68
PC	40+11.38					153071.38	437194.51
PC	40+11.38			40.00	9.54	153071.38	437194.51
CC	40+11.38		13°40'16.37"			153036.29	437175.31
PT	40+20.93					153065.85	437202.26
PT	40+20.93	132°20'55.24"			6.26	153065.85	437202.26
PC	40+27.19					153061.64	437206.88
PC	40+27.19			18.00	28.42	153061.64	437206.88
CC	40+27.19		90°27'10.37"			153048.33	437194.76
PT	40+55.60					153036.10	437207.96
PT	40+55.60	222°48'05.62"			11.40	153036.10	437207.96
END	40+67.00					153027.74	437200.22

ALIGNMENT NAME		WEST ARM DR NW					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
START	50+00.00	222°48'05.62"			11.98	153087.29	437255.37
PC	50+11.98					153078.50	437247.22
PC	50+11.98			18.00	28.13	153078.50	437247.22
CC	50+11.98		89°32'49.63"			153090.73	437234.02
PT	50+40.12					153077.42	437221.89
PT	50+40.12	312°20'55.24"			5.15	153077.42	437221.89
PC	50+45.27					153080.89	437218.09
PC	50+45.27			-150.00	19.15	153080.89	437218.09
CC	50+45.27		07°18'56.49"			152970.03	437117.04
PT	50+64.42					153092.86	437203.15
PT	50+64.42	305°01'58.75"			3.64	153092.86	437203.15
END	50+68.06					153094.95	437200.16

ALIGNMENT NAME		NORTHERN AVE SE					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
START	340+00.00	42°48'05.62"			10.00	153037.28	437267.66
PC	340+10.00					153044.62	437274.46
PC	340+10.00			18.00	23.55	153044.62	437274.46
CC	340+10.00		74°57'31.55"			153032.39	437287.66
PT	340+33.55					153048.32	437296.05
PT	340+33.55	117°45'37.17"			12.72	153048.32	437296.05
PC	340+46.26					153042.40	437307.30
PC	340+46.26			-20.00	8.17	153042.40	437307.30
CC	340+46.26		23°23'50.82"			153060.09	437316.62
PT	340+54.43					153040.15	437315.09
PT	340+54.43	94°21'46.34"			25.73	153040.15	437315.09
END	340+80.16					153038.19	437340.75

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER — 49073 LICENSE NO. — / / DATE

DESIGN BY: E. ITKONEN
CAD BY: E. ITKONEN
CHECKED BY: S. PARK
LAST REVISION: / /

ALIGNMENT PLAN AND TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 84 / 336

ALIGNMENT NAME		NORTHERN AVE NE					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
START	350+00.00	147°09'19.46"			6.05	153070.83	437335.41
PC	350+06.05					153065.74	437338.70
PC	350+06.05			3.00	6.66	153065.74	437338.70
CC	350+06.05		127°12'26.88"			153064.12	437336.18
PT	350+12.71					153061.13	437335.95
PT	350+12.71	274°21'46.34"			6.01	153061.13	437335.95
PC	350+18.73					153061.58	437329.95
PC	350+18.73			18.00	40.35	153061.58	437329.95
CC	350+18.73		128°26'19.27"			153079.53	437331.32
PT	350+59.08					153091.76	437318.11
PT	350+59.08	42°48'05.62"			7.19	153091.76	437318.11
HPI	350+66.27					153097.03	437323.00
HPI	350+66.27	40°53'34.28"			6.95	153097.03	437323.00
END	350+69.08					153099.16	437324.84

ALIGNMENT NAME		MAPLETON AVE SE					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
START	360+00.00	43°14'10.44"			3.68	153485.69	437675.25
PC	360+03.68					153488.38	437677.77
PC	360+03.68			-417.00	6.32	153488.38	437677.77
CC	360+03.68		00°52'05.57"			153774.02	437373.97
PRC	360+10.00					153493.01	437682.06
PRC	360+10.00			20.00	31.57	153493.01	437682.06
CC	360+10.00		90°26'38.87"			153479.53	437696.84
PT	360+41.57					153494.21	437710.43
PT	360+41.57	132°48'43.73"			72.88	153494.21	437710.43
END	361+14.45					153444.68	437763.90

ALIGNMENT NAME		MAPLETON AVE NE					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
START	370+00.00	312°48'43.73"			76.50	153454.12	437772.64
PC	370+76.50					153506.11	437716.52
PC	370+76.50			20.00	28.83	153506.11	437716.52
CC	370+76.50		82°36'11.27"			153520.78	437730.11
PRC	371+05.34					153532.37	437713.81
PRC	371+05.34			-417.00	10.00	153532.37	437713.81
CC	371+05.34		01°22'26.40"			153774.02	437373.97
PT	371+15.34					153540.59	437719.51

ALIGNMENT NAME		ROCKVAM RD SW					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
START	60+00.00	122°13'22.32"			5.55	153608.75	437705.87
PC	60+05.55					153605.79	437710.57
PC	60+05.55			8.00	12.40	153605.79	437710.57
CC	60+05.55		88°46'42.85"			153599.02	437706.31
PT	60+17.95					153594.90	437713.16
PT	60+17.95	211°00'05.18"			5.00	153594.90	437713.16
END	60+22.95					153590.62	437710.59

ALIGNMENT NAME		ROCKVAM RD NW					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
START	70+00.00	211°00'05.18"			5.00	153621.48	437729.13
PC	70+05.00					153617.19	437726.56
PC	70+05.00			8.00	12.74	153617.19	437726.56
CC	70+05.00		91°13'17.15"			153621.31	437719.70
PT	70+17.74					153614.55	437715.44
PT	70+17.74	302°13'22.32"			5.00	153614.55	437715.44
END	70+22.74					153617.21	437711.21

ALIGNMENT NAME		ROCKVAM RD					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
START	220+00.00	302°13'22.28"			230.05	153596.84	437734.16
END	222+30.05					153719.50	437539.54

ALIGNMENT NAME		LIFT STATION SE					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
START	380+00.00	31°00'05.18"			10.00	153704.12	437818.46
PC	380+10.00					153712.69	437823.61
PC	380+10.00			20.00	31.42	153712.69	437823.61
CC	380+10.00		90°00'00.00"			153702.39	437840.75
PT	380+41.42					153719.53	437851.05
PT	380+41.42	121°00'05.18"			22.21	153719.53	437851.05
END	380+63.63					153708.09	437870.09

Hennepin

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER — 49073 LICENSE NO. — / / DATE

DESIGN BY: E. ITKONEN
CAD BY: E. ITKONEN
CHECKED BY: S. PARK
LAST REVISION: / /

ALIGNMENT PLAN AND TABULATIONS

CSAH 51 / HENNEPIN COUNTY PROJECT 2182000
SAP 027-651-011, SAP 027-619-029, SAP 027-594-005

SHEET 85 / 336

ALIGNMENT NAME		LIFT STATION NE					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
START	390+00.00	301°00'05.18"			22.21	153724.81	437880.13
PC	390+22.21					153736.24	437861.09
PC	390+22.21			20.00	31.42	153736.24	437861.09
CC	390+22.21		90°00'00.00"			153753.39	437871.40
PT	390+53.63					153763.69	437854.25
PT	390+53.63	31°00'05.18"			10.00	153763.69	437854.25
END	390+63.63					153772.26	437859.40

ALIGNMENT NAME		PARK LN SE					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
PC	400+00.00			583.00	10.00	154031.39	438031.93
CC	400+00.00		00°58'57.99"			153628.09	438452.93
PCC	400+10.00					154038.55	438038.91
PCC	400+10.00			20.00	32.86	154038.55	438038.91
CC	400+10.00		94°08'12.09"			154024.47	438053.11
PT	400+42.86					154037.62	438068.18
PT	400+42.86	138°53'18.76"			155.57	154037.62	438068.18
END	401+98.43					153920.40	438170.47

ALIGNMENT NAME		PARK LN NE					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
START	410+00.00	318°53'32.55"			13.36	154044.83	438094.74
PC	410+13.36					154054.89	438085.96
PC	410+13.36			20.00	31.54	154054.89	438085.96
CC	410+13.36		90°21'53.56"			154068.04	438101.03
PT	410+44.90					154083.19	438087.97
PT	410+44.90	49°15'26.12"			10.00	154083.19	438087.97
END	410+54.90					154089.72	438095.55

ALIGNMENT NAME		DICKSON AVE EXT SE					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
START	420+00.00	62°32'44.95"			10.00	154606.06	438715.22
PC	420+10.00					154610.67	438724.10
PC	420+10.00			25.00	34.93	154610.67	438724.10
CC	420+10.00		80°03'04.54"			154588.48	438735.62
PRC	420+44.93					154603.67	438755.48
PRC	420+44.93			-82.00	58.62	154603.67	438755.48
CC	420+44.93		40°57'35.69"			154653.47	438820.62
PT	421+03.55					154573.16	438804.08
PT	421+03.55	101°38'13.80"			0.63	154573.16	438804.08
END	421+04.18					154573.03	438804.69

ALIGNMENT NAME		DICKSON AVE EXT NE					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
START	430+00.00	285°09'24.67"			3.85	154585.53	438807.82
PC	430+03.85					154586.54	438804.10
PC	430+03.85			48.00	44.80	154586.54	438804.10
CC	430+03.85		53°28'36.88"			154632.87	438816.65
PCC	430+48.65					154615.38	438771.95
PCC	430+48.65			20.00	29.29	154615.38	438771.95
CC	430+48.65		83°54'43.40"			154622.67	438790.58
PT	430+77.94					154640.41	438781.36
PT	430+77.94	62°32'44.95"			1.80	154640.41	438781.36
PC	430+79.75					154641.25	438782.95
PC	430+79.75			-417.00	8.20	154641.25	438782.95
CC	430+79.75		01°07'34.93"			155011.28	438590.70
PT	430+87.94					154645.10	438790.19

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AMBER KLEIN, LICENSED PROFESSIONAL ENGINEER — 49073 LICENSE NO. — / / DATE

DESIGN BY: E. ITKONEN
CAD BY: E. ITKONEN
CHECKED BY: S. PARK
LAST REVISION: / /

ALIGNMENT PLAN AND TABULATIONS

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SHEET 86 / 336

ALIGNMENT NAME		DICKSON AVE SW					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
START	80+00.00	174°27'18.21"			14.06	154716.75	438737.95
PC	80+14.06					154702.76	438739.30
PC	80+14.06			50.00	5.37	154702.76	438739.30
CC	80+14.06		06°09'10.34"			154697.93	438689.54
PT	80+19.43					154697.40	438739.54
PT	80+19.43	180°36'28.55"			28.62	154697.40	438739.54
PC	80+48.05					154668.78	438739.23
PC	80+48.05			20.00	21.62	154668.78	438739.23
CC	80+48.05		61°56'16.40"			154668.99	438719.23
PT	80+69.67					154651.24	438728.45
PT	80+69.67	242°32'44.95"			10.00	154651.24	438728.45
END	80+79.67					154646.63	438719.58

ALIGNMENT NAME		DICKSON AVE NW					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
PC	90+00.00			383.00	10.00	154685.06	438791.37
CC	90+00.00		01°29'45.50"			155011.28	438590.70
PCC	90+10.00					154679.93	438782.79
PCC	90+10.00			20.00	42.09	154679.93	438782.79
CC	90+10.00		120°34'39.56"			154697.24	438772.76
PRC	90+52.09					154697.40	438752.76
PRC	90+52.09			-63.22	6.64	154697.40	438752.76
CC	90+52.09		06°01'17.51"			154697.93	438689.54
PT	90+58.73					154704.04	438752.46
PT	90+58.73	354°27'18.21"			14.06	154704.04	438752.46
END	90+72.79					154718.03	438751.10

ALIGNMENT NAME		PARKING SW					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
START	500+00.00	161°56'49.89"			38.66	155063.51	439494.53
PC	500+38.66					155026.75	439506.51
PC	500+38.66			20.00	29.07	155026.75	439506.51
CC	500+38.66		83°16'32.53"			155020.55	439487.49
PT	500+67.73					155002.39	439495.87
PT	500+67.73	245°13'22.42"			10.00	155002.39	439495.87
END	500+77.73					154998.20	439486.79

ALIGNMENT NAME		PARKING NW					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
START	510+00.00	163°36'17.24"			23.15	155104.20	439539.50
PC	510+23.15					155081.99	439546.03
PC	510+23.15			55.00	27.18	155081.99	439546.03
CC	510+23.15		28°18'49.24"			155066.47	439493.27
PCC	510+50.33					155055.11	439547.08
PCC	510+50.33			15.00	39.28	155055.11	439547.08
CC	510+50.33		150°01'48.66"			155058.21	439532.40
PT	510+89.61					155053.56	439518.14
PT	510+89.61	341°56'55.15"			16.78	155053.56	439518.14
END	511+06.38					155069.51	439512.94

ALIGNMENT NAME		CSAH 19 SE					
TYPE	STATION	AZIMUTH	DELTA	RADIUS	LENGTH	NORTHING	EASTING
START	440+00.00	65°13'22.42"			10.00	154969.49	439522.43
PC	440+10.00					154973.68	439531.51
PC	440+10.00			35.00	60.99	154973.68	439531.51
CC	440+10.00		99°50'10.70"			154941.90	439546.17
PT	440+70.99					154950.93	439579.99
PT	440+70.99	165°03'33.12"			23.53	154950.93	439579.99
END	440+94.52					154928.19	439586.06

Hennepin

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SHEET 87 / 336