

I:\PWU\ENGINEER\PROJECTS\1500-1999\1602_Kenwood_Mill_Overlay\23-ACAD-DRAWINGS\1602_TTS_001.dwg

PLAN LEGEND

RIGHT OF WAY LINE	---
DITCH CENTERLINE	---
FENCE LINE	-x-x-
RETAINING WALL	=====
GRAVEL LINE	-----
GUARD RAIL LINE	o-o-o-o
RAILROAD TRACK LINE	
ROAD CENTERLINE	=====
TREE LINE	~~~~~
STREAM LINE	~~~~~
WETLAND LINE	-----
EX SANITARY LINE	---
PR SANITARY LINE	---SAN---
AB SANITARY LINE	---AB-SAN---
EX FORCEMAIN LINE	---
PR FORCEMAIN LINE	---FM---
AB FORCEMAIN LINE	---AB-FM---
EX STORM LINE	---
PR STORM LINE	---ST---
AB STORM LINE	---AB-ST---
EX WATER LINE	---
PR WATER LINE	---W---
AB WATER LINE	---AB-W---
EX GAS LINE	---
PR GAS LINE	---GAS---
AB GAS LINE	---AB-GAS---
EX STEAM LINE	---
PR STEAM LINE	---
AB STEAM LINE	---
UG CABLE TV LINE	---UGTV---
AB CABLE TV LINE	---AB-CATV---
UG ELECTRIC LINE	---UGE---
AB ELECTRIC LINE	---AB-ELEC---
UG FIBEROPTIC LINE	---FO---
AB FIBEROPTIC LINE	---AB-FO---
UG TELEPHONE LINE	---UGT---
AB TELEPHONE LINE	---AB-TELE---
OH ELECTRIC LINE	---OHE---
OH TELEPHONE LINE	---OHT---
OH CABLE TV LINE	---OHTV---

SYMBOLS

EX SANITARY MANHOLE	(SAN)	⊗
EX SANITARY CLEANOUT	(STRM)	⊗
EX STORM MANHOLE	(W)	⊗
EX STORM CATCHBASIN	(WV)	⊗
EX. WATER MANHOLE	(W)	⊗
EX. WATER VALVE	(WV)	⊗
EX. WATER HYDRANT	(W)	⊗
EX. WATER SHUTOFF	(W)	⊗
EX. WATER & GAS MH	(W&G)	⊗
EX. GAS MANHOLE	(GAS)	⊗
EX. GAS VALVE	(GV)	⊗
EX. GAS SHUTOFF	(GV)	⊗
EX. STEAM MANHOLE	(STEAM)	⊗
EX. TELEPHONE MANHOLE	(T)	⊗
EX. ELECTRIC MANHOLE	(E)	⊗
EX. POWERPOLE	(P)	⊗
EX. LIGHT POLE	(L)	⊗
EX. ELECTRIC VAULT	(EV)	⊗
EX. ANCHOR	(A)	⊗
EX. ELECTRIC TRANSFORMER	(ET)	⊗
EX. STREET LIGHT	(SL)	⊗
EX. SIGNAL W/ STREET LIGHT	(H.H.)	⊗
EX. HANDHOLE	(H.H.)	⊗
EX. HANDHOLE	(H.H.)	⊗
EX. TELEPHONE PEDESTAL	(TP)	⊗
EX. WELL	(W)	⊗
BENCHMARK	(BM)	⊗
FOUND CI MONUMENT	(FM)	⊗
EX. SIGN	(S)	⊗
CONTROL POINT	(CP)	⊗
EX DECIDUOUS TREE	(DT)	⊗
EX CONIFEROUS TREE	(CT)	⊗
EX. PARKING METER	(PM)	⊗
EX. SOIL BORING	(SB)	⊗

DESIGN DESIGNATION

STATE AID PROJECT NO. XXX-XXX-XXX	
R-VALUE 20	ΣN18.20 X
ADT (CURRENT YEAR) 2017	= 9711
ADT (FUTURE YEAR) 2037	= 11850
D (DIRECTIONAL DISTR.)	= N/A
T (HEAVY COMMERCIAL)	= N/A
PROJ. SOIL FACTOR	= N/A
SHOULDER WIDTH	= N/A
DESIGN LOADING	= N/A
DESIGN SPEED 30 MPH	
BASED ON STOPPING SIGHT DISTANCE	
HEIGHT OF EYE 3.5' HEIGHT OF OBJECT 2.0'	
DESIGN SPEED NOT ACHIEVED AT:	
STA. N/A TO STA. N/A MPH N/A	

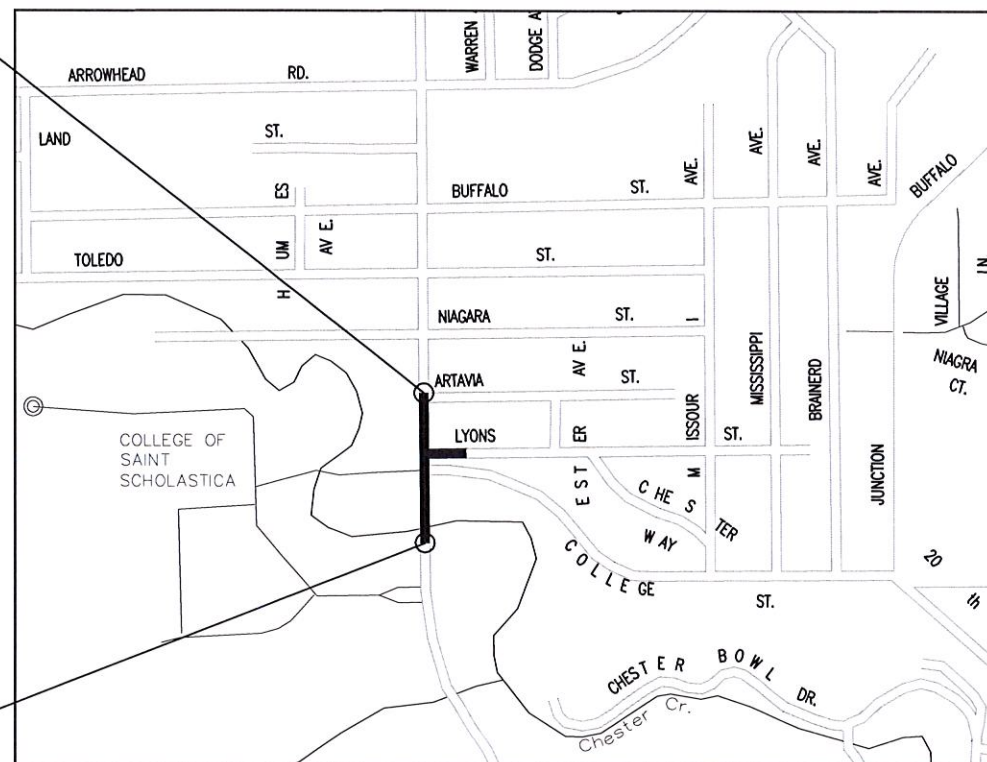
WARNING:
LOCATION OF UNDERGROUND UTILITIES TO BE VERIFIED BY
CONTRACTOR. CALL BEFORE DIGGING. GOPHER STATE ONE CALL
1-800-252-1166 REQUIRED BY LAW

MINNESOTA DEPARTMENT OF TRANSPORTATION CITY OF DULUTH DEPARTMENT OF PUBLIC WORKS AND UTILITIES ENGINEERING DIVISION

CONSTRUCTION PLANS FOR:
KENWOOD AVE MILL & OVERLAY
LYONS STREET RECONSTRUCTION AND DRAINAGE IMPROVEMENTS,
ADA IMPROVEMENTS, CURB & GUTTER AND SIDEWALK.

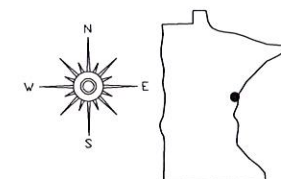
END PROJECT: S.A.P 118-151-013

KENWOOD AVE STA. 83+74.72



BEGIN PROJECT: S.A.P. 118-151-013

KENWOOD AVE STA. 75+91.00



SCALE = 1" = 1000'

STATE AID PROJECT NO.	118-151-013
GROSS LENGTH	783.72 FEET 0.148 MILES
BRIDGES-LENGTH	N/A FEET N/A MILES
EXCEPTIONS-LENGTH	N/A FEET N/A MILES
NET LENGTH	783.720 FEET 0.148 MILES

PROJECT LOCATION
ST. LOUIS COUNTY
CITY OF DULUTH
A POINT APPROX. 234' NORTH OF
CENTER OF SEC. 15, T 50 N, R 14 W
TO
A POINT APPROX. 1018' NORTH OF
CENTER OF SEC. 15, T 50 N, R 14 W

GOVERNING SPECIFICATIONS

THE 2016 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION
"STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN. AVAILABLE

AT:

<http://www.dot.state.mn.us/pre-letting/spec/index.html>

THE 2017 EDITION OF THE CITY OF DULUTH PUBLIC WORKS AND UTILITIES
DEPARTMENT CONSTRUCTION STANDARDS AND SUPPLEMENTS OR ADDENDUMS
SHALL APPLY.

AVAILABLE AT:

<http://www.duluthmn.gov/engineering/standard-construction-specifications/>

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY LEVEL D.
THIS 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".

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	STATEMENT OF ESTIMATED QUANTITIES
3-9	TABULATION CHARTS
10-12	TYPICAL SECTIONS
13-19	CONSTRUCTION DETAILS
20-21	INPLACE TOPOGRAPHY
22-23	REMOVAL PLAN
24-27	CONSTRUCTION PLAN
28-30	CROSS SECTIONS
31-32	STRIPING PLAN
33-35	TRAFFIC CONTROL

THIS PLAN CONTAINS 35 SHEETS

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.

DUNCAN SCHWENSOHN

PROJECT ENGINEER (TYPED OR PRINTED NAME)

Duncan Schwensohn 6/13/17 45486
PROJECT ENGINEER DATE LIC. NO.

CITY OF DULUTH APPROVAL

APPROVED *[Signature]* 6/13/17
CHIEF ENGINEER OF TRANSPORTATION DATE

APPROVED *[Signature]* 6-13-17
CHIEF ENGINEER OF UTILITIES DATE

APPROVED *[Signature]* 6-13-17
CITY ENGINEER DATE

STATE AID APPROVAL

APPROVED *[Signature]* 6-20-17
DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE DATE
WITH STATE-AID RULES/POLICY

APPROVED *[Signature]* 6-20-17
APPROVED FOR STATE AID FUNDING: STATE AID ENGINEER DATE

STATE PROJECT NO. S.A.P.118-151-013

CITY PROJECT NUMBERS 1602

DRAWN BY: DJK SHEET NO. 1 OF 35

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STATEMENT OF ESTIMATED QUANTITIES								PARTICIPATING	NON-PARTICIPATING
							TOTAL	S.A.P. 118-151-013	C.O.D. PROJ 1602
							PROJECT	PROJECT	PROJECT
							ESTIMATED	ESTIMATED	ESTIMATED
LINE	NOTES	CHART	SHEET	SPEC. NO.	DESCRIPTION	UNIT	QUANTITY	QUANTITY	QUANTITY
1				2021.501	MOBILIZATION	LS	1	0.8	0.2
2				2101.501	CLEARING	ACRE	0.1		0.1
3				2101.506	GRUBBING	ACRE	0.1		0.1
4	1	D	5	2104.501	REMOVE SEWER PIPE (STORM)	L F	51	4	47
5	1	C	5	2104.501	REMOVE CURB AND GUTTER	L F	361	62	299
6	1	C	5	2104.503	REMOVE CONCRETE WALK	S F	4,747	4,698	49
7	1	C	5	2104.505	REMOVE PAVEMENT	S Y	395	370	25
8	1	C	5	2104.505	REMOVE BITUMINOUS PAVEMENT	S Y	563	235	328
9	1	D	5	2104.509	REMOVE CATCH BASIN	EACH	2		2
10	1	B	4	2104.509	REMOVE SIGNAL FOUNDATION	EACH	1	1	
11	1	K	9	2104.509	REMOVE SIGN	EACH	1		1
12		C	5	2104.511	SAWING CONCRETE PAVEMENT (FULL DEPTH)	L F	549	549	
13		C	5	2104.513	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	L F	505	429	76
14	5	D	5	2104.523	SALVAGE CASTING	EACH	5	3	2
15		A	3	2105.501	COMMON EXCAVATION	C Y	234	20	214
16		E	6	2105.522	SELECT GRANULAR BORROW MOD 7% (CV)	C Y	140	15	125
17		E	6	2105.604	GEOTEXTILE FABRIC SPECIAL TYPE V	S Y	365	30	335
18	6	E	6	2211.503	AGGREGATE BASE (CV) CLASS 5	C Y	115	40	75
19		C	5	2232.501	MILL BITUMINOUS SURFACE	S Y	3,472	3,472	
20		C	5	2232.502	"MILL CONCRETE SURFACE (1.0")"	S Y	2,857	2,857	
21		G	7	2301.511	STRUCTURAL CONCRETE	C Y	20	20	
22		G	7	2301.604	PLACE CONCRETE PAVEMENT	SQ YD	97	97	
23	2,3,4	E	6	2360.502	TYPE SP 9.5 WEARING COURSE MIXTURE (3,C)	TON	966	905	61
24		H	7	2502.541	4" PERF PVC PIPE DRAIN SDR 35	LIN FT	240	29	211
25		F	6	2503.511	"12" CP PIPE SEWER"	L F	49	9	40
26		F	6	2503.541	"12" RC PIPE SEWER DESIGN 3006 CLASS III"	L F	71		71
27		F	6	2503.602	CONNECT TO EXISTING MANHOLES	EACH	1	1	
28		B	4	2504.602	CONCRETE ENCASED VALVE BOX COLLAR	EACH	7	7	
29		F	6	2506.502	CONSTRUCT DRAINAGE STRUCTURE DESIGN G	EACH	3		3
30		F	6	2506.602	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL 1	EACH	1		1
31		M	9	2506.516	CASTING ASSEMBLY	EACH	6	2	4
32		B, F	4, 6	2506.522	ADJUST FRAME AND RING CASTING	EACH	6	4	2
33		B, F	4, 6	2506.602	CONCRETE ENCASED CASTING COLLAR	EACH	4	3	1
34	6	G	7	2521.501	"6" CONCRETE WALK"	S F	4,656	4,656	
35	6	G	7	2531.501	CONCRETE CURB AND GUTTER DESIGN B624	L F	351		351
36	6	G	7	2531.501	CONCRETE CURB AND GUTTER DESIGN B624 (MODIFIED)	L F	796	796	
37	6	G	7	2531.604	"8" CONCRETE VALLEY GUTTER"	S Y	16	16	
38		G	7	2531.618	TRUNCATED DOMES	S F	57	57	
39			34-35	2563.601	TRAFFIC CONTROL	LS	1	0.8	0.2
40		K	9	2564.531	SIGN PANELS TYPE C	S F	20.6	10.3	10.3
41		K	9	2564.537	INSTALL SIGN TYPE C	EACH	3	3	
42		K	9	2564.602	RELOCATE SIGN	EACH	1		1
43		I	7	2573.502	SILT FENCE, TYPE HI	L F	175		175
44		I	7	2573.53	STORM DRAIN INLET PROTECTION	EACH	4	3	1
45		I	7	2573.535	STABILIZED CONSTRUCTION EXIT	LS	1		1
46		L	9	2575.505	SODDING TYPE LAWN	S Y	429	380	49
47		J	8	2580.603	INTERIM PAVEMENT MARKING	L F	1,016	1,016	
48		J	8	2582.501	PAVEMENT MESSAGE EPOXY	S F	61	61	
49		J	8	2582.502	"4" SOLID LINE EPOXY"	L F	300	300	
50		J	8	2582.502	"24" SOLID LINE EPOXY"	L F	86	72	14
51		J	8	2582.502	"4" DOUBLE SOLID LINE EPOXY"	L F	716	716	
52		J	8	2582.503	CROSSWALK PREFORM TERMOPLASTIC GROUND IN	S F	579	579	

NOTES:

- DISPOSAL OF EXISTING MATERIAL IS INCIDENTAL TO THIS ITEM.
- SHAPING OF RECLAIMED GRADE BEFORE PAVING SHALL BE AT THE DIRECTION OF THE ENGINEER. PAID FOR UNDER ITEM 2123.503 MOTOR GRADER.
- GRADING OF RECLAIMED MATERIAL WITH MOTOR GRADER DURING THE RECLAMATION OPERATION SHALL BE INCIDENTAL TO THIS ITEM.
- PAVING OF FIRST LIFT OF BITUMINOUS SHALL BE COMPLETED WITHIN 4 DAYS OF RECLAMATION.
- SALVAGE ALL CASTINGS AND REINSTALL. ALL CASTINGS THAT ARE NOT REINSTALLED SHALL BE DELIVERED TO 40th AVE WEST MAINTENANCE GARAGE AND CONSIDERED INCIDENTAL TO THE ITEM. (SEE SPECIAL PROVISIONS)(CITY OF DULUTH CONSTRUCTION STANDARDS)
- CLASS 5 AND BACKFILL ADJACENT TO ANY CONCRETE WORK SHALL BE CONSIDERED INCIDENTAL TO THIS ITEM. DISPOSAL CONTRACTOR SHALL PROTECT AND RESTRICT USE OF CONC WALKS AND DRIVES UNTIL THEY CAN BE USED SAFELY AND SUPPLY A SAFE ROUTE FOR PEDESTRIANS DURING CONSTRUCTION AND COMPLY WITH THE LATEST TEMPORARY TRAFFIC CONTROL FIELD MANUAL.

TABULATION CHART INDEX		
CHART	DESCRIPTION	SHEET
NO.		NO.
A	EARTHWORK SUMMARY	3
B	PUBLIC UTILITIES	4
C	REMOVALS AND SAWCUTTING PAVEMENT	5
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E	SUBBASE, AGGREGATE BASE AND BITUMINOUS	6
F	PROPOSED DRAINAGE STRUCTURES AND PIPES	6
G	PROPOSED CONCRETE WORK	7
H	SUBSURFACE DRAINS	7
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J	PAVEMENT MARKINGS	8
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L	PERMANENT TURF RESTORATION	9
M	CASTING ASSEMBLIES	9

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.

SIGNATURE: Duncan C. Schwensohn

DUNCAN SCHWENSOHN
TYPE NAME

DATE: 6/13/2017

LIC. NO.: 45486



CITY OF DULUTH
ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
DULUTH, MN 55802

KENWOOD AVE MILL & OVERLAY

CITY PROJECT NO.: 1602 STATE AID PROJECT NO.: 118-151-013

DRAWN BY: DJK/SCA/BRC
STATEMENT OF ESTIMATED QUANTITIES
SHEET NO. 002 OF 35

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A		EARTHWORK SUMMARY						
		TOTAL			TOTAL	EMBANKMENT	EXCESS	
		EXCAVATION			COMMON	FROM	COMMON	
		FROM			EXCAVATION	X-SEC.	EXCAVATION	
LOCATION	LT/RT	X-SEC						REMARKS
		CU YD			CU YD	CU YD	CU YD	
LYONS STREET								
S.A.P. 118-151-023								
4+31.23 TO 4+74.24	LT AND RT	20.0			20.0	2.8	17.2	
C.O.D. PROJ. 1602								
3+06.00 to 4+31.23	LT AND RT	214.0			214.0	77.7	136.3	
TOTALS		234.0			234.0	81	154	

CITY OF DULUTH STANDARD DETAILS		
DETAIL NO.		DESCRIPTION
EX-1		PVC AND CORRUGATED POLYETHYLENE SEWER PIPE BEDDING
EX-3		CONCRETE STORM SEVER BEDDING
SAN-1		SANITARY CASTING DETAIL
SAN-3		SANITARY MANHOLE IN NON-PAVED AREAS
SAN-3A		CONCRETE ENCASED COLLAR IN ROADWAY
SAN-9		POLYETHYLENE MH ADJUSTING RING - FLAT
SAN-9A		POLYETHYLENE MH ADJUSTING RING - WEDGE
STRM-1		STORM MH CASTING
STRM-2		CATCH BASIN/CURB BOX CASTING
STRM-3		CATCH BASIN CASTINGS
STRM-4		FABRIC WRAPPED CATCH BASING CASTING
STRM-5A		CONCRETE ENCASED CASTING COLLAR IN ROADWAY
STRM-7		GUTTER STAMP
STR-1		PERFORATED PIPE DETAIL
STR-8		STREET RESTORATION OVER TRENCH
W-19		CONCRETE ENCASED COLLAR IN ROADWAY

MnDOT STANDARD PLATES	
THE FOLLOWING STANDARD PLATES SHALL APPLY ON THIS PROJECT	
PLATE NO.	DESCRIPTION
3000L	REINFORCED CONCRETE PIPE
3006C	GASKET JOINT FOR R.C. PIPE
4005M	MANHOLE OR CATCH BASIN - PRECAST DESIGN F
4006L	MANHOLE OR CATCH BASIN - PRECAST - DESIGN G
4011E	PRECAST CONCRETE BASE
4020I	MANHOLE OR CATCH BASIN COVER
4154B	CATCH BASIN GRATE CASTING
4160D	CURB BOX CASTING FOR CATCH BASIN
7100H	CONCRETE CURB AND GUTTER
7111J	INSTALLATION OF CATCH BASIN CASTINGS (CONCRETE CURB AND GUTTER)
8000J	CHANNELIZERS

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SIGNATURE: Duncan C. Schwensohn

DUNCAN SCHWENSOHN
TYPE NAME

DATE: 6/13/2017

LIC. NO: 45486



CITY OF DULUTH
ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
DULUTH, MN 55802

KENWOOD AVE MILL & OVERLAY

CITY PROJECT NO.: 1602

STATE AID PROJECT NO.: 118-151-013

DRAWN BY: DJK/SCA/BRC

CHARTS

SHEET NO. 003 OF 35

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B	UTILITIES										
						REMOVE	CONCRETE	CONCRETE	ADJUST		
						SIGNAL	ENCASED	ENCASED	FRAME &		
						FOUNDATION	VALVE BOX	CASTING	CASTING		
							COLLAR	COLLAR	RING		
	FROM					2104	2503	2506	2506		
KENWOOD AVENUE. S.A.P. 118-151-013											
TYPE	STA	OS	TO	STA	OS	OS	OS	OS	OS	OWNER	REMARK
SAN MH	78+88.3	20.5' RT						1	1	CITY OF DULUTH	CITY OF DULUTH STD DETAIL SAN-3A
WATER VALVE	78+47.2	17.03' RT					1			CITY OF DULUTH	CITY OF DULUTH STD DETAIL W-19
WATER VALVE	78+72.4	14.7' RT					1			CITY OF DULUTH	CITY OF DULUTH STD DETAIL W-19
GAS VALVE	78+79.2	25.1' LT								CITY OF DULUTH	(IN SIDEWALK) - ADJUST VALVE BOX
GAS AVLVE	79+34.8	17.3' RT					1			CITY OF DULUTH	
FIBER OPTIC	79+54.3	34' LT	TO	79+97.7	34' LT					NESC	ADJUST - AS NEEDED
FIBER OPTIC	79+54.3	36' LT	TO	79+97.7	36' LT					PAUL BUNYAN	ADJUST - AS NEEDED
FIBER OPTIC	79+54.3	38' LT	TO	79+97.7	40' LT					COMPUDYNE	ADJUST - AS NEEDED
FIBER OPTIC	79+54.3	40' LT	TO	79+97.7	40' LT					INVOLTA	ADJUST - AS NEEDED
TELE MH	79+96.4	12.9' LT							1	CENTURYLINK	CONCRETE VAULT
GAS VALVE	80+10.3	15.9' LT					1			CITY OF DULUTH	
SAN MH	80+50.5	20.1' RT						1		CITY OF DULUTH	CITY OF DULUTH STD DETAIL SAN-3A
SIGNAL FOUNDATION	80+65.7	32.4' LT				1				CITY OF DULUTH	REMOVE TO 1' BELOW EXISTING GRADE
WATER VALVE	80+72.2	20' LT					1			CITY OF DULUTH	CITY OF DULUTH STD DETAIL W-19
WATER VALVE	83+27.9	9.2' RT					1			CITY OF DULUTH	CITY OF DULUTH STD DETAIL W-19
WATER VALVE	83+36.7	17' RT					1			CITY OF DULUTH	CITY OF DULUTH STD DETAIL W-19
SAN MH	83+62.5	20' RT						1		CITY OF DULUTH	CITY OF DULUTH STD DETAIL SAN-3A
LYONS STREET - CONSRUCTION ALIGNMENT S.A.P. 118-151-013											
FIBER OPTIC	4+20.0	21.1' LT	TO	4+42.7	15.2' RT					CONSOLIDATED	ADJUST AS NEEDED
LYONS STREET - CONSRUCTION ALIGNMENT C.O.D. PROJ. 1602											
SANITARY MH	3+93.6	20.6' RT						1	1	CITY OF DULUTH	CITY OF DULUTH STD DETAIL SAN-3
BURIED ELECTRIC	4+19.3	20.4' LT	TO	4+38.0	15.6' RT					CITY OF DULUTH	REMOVE (2" PVC SIGNAL CONDUIT)
BURIED ELECTRIC	4+17.2	19.3' LT	TO	4+36.9	16.6' RT					MN POWER	ADJUST - PRESERVE AND PROTECT
CATV - OVHD	4+20.3	32' LT	TO	4+48.4	16.1' RT					CHARTER COMM	LEAVE AS IS
TOTALS						1	7	4	3		

NOTES;

- ① BACKFILL WITH COMMON BORROW, 4" TOPSOIL AND SODDING LAWN TYPE (INCIDENTAL TO REMOVAL)

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SIGNATURE: Duncan C. Schwensohn

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ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
DULUTH, MN 55802

KENWOOD AVE MILL & OVERLAY

CITY PROJECT NO.: 1602

STATE AID PROJECT NO.: 118-151-013

DRAWN BY: DJK/SCA/BRC

CHARTS

SHEET NO. 004 OF 35

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C	REMOVALS AND SAWCUTTING PAVEMENT									
		REMOVE		SAWING	SAWING		REMOVE	MILL	MILL	
		CURB	REMOVE	BITUMINOUS	CONC	REMOVE	BITUMINOUS	BITUMINOUS	CONCRETE	
		AND	CONCRETE	PAVEMENT	PAVEMENT	PAVEMENT	PAVEMENT	SURFACE	SURFACE	
		GUTTER	WALK	FULL DEPTH	FULL DEPTH				1"	
LOCATION	L / R	2104	2104	2104	2104	2104.00	2104	2232	2232	REMARKS
		LIN FT	SQ FT	LIN FT	LIN FT	SQ YD	SQ YD	SQ YD	SQ YD	
S.A.P. 118-151-013										
KENWOOD AVENUE										
75+91.0 TO 83+74.72	LT/RT						150.0	3472.0	2857.0	WIDTH VARIES - SEE TYPICALS (SHEETS 11-12)
75+91.00 TO 79+36.64	LT		2,076	345						SIDEWALK (INCLUDES INTEGRANT CURB)
79+36.73 TO 83+74.95	LT				440	172.0				INCLUDE 3" BIT AND INTEGRANT CURB
79+36.77 TO 79+45.24	LT		52		12	3.3				
79+45.24 TO 79+60.5	26' LT TO 47' LT		224							
79+45.92 TO 79+64.65	21.7' LT TO 46.8' LT	36								
79+45.24 TO 79+99.32	20.7' LT TO 46.8 LT						85.0			
79+90.6 TO 79+99.32	47.1' LT TO 24.8' LT	26								
79+96.70 TO 86+74.95	33' LT TO 26' LT		2,277							
80+14.13 TO 80+93.77	18.3 RT			84		107.0				COMPOSITE PAVEMENT & INTEGRANT CURB
INPLACE LYONS STREET										
11+83 TO 11+91	38' LT				8					SAW AT SIDEWALK JOINT LINE
11+85	19' TO 39' LT		97							
11+87	24' RT		21							
11+96.3	36.2' LT TO 43.3' RT				89					COMPOSITE PAVEMENT & INTEGRANT CURB
11+81.54 TO 11+96.3	LT/RT					88.0				COMPOSITE PAVEMENT & INTEGRANT CURB
INPLACE LYONS STREET C.O.D. PROJ. 1602										
10+12.05	12.0' LT			2						INPLACE STATIONING
10+12.05 TO 10+58.95	10.0' LT			74						
10+12.05 TO 10+58.95	10' - 12' LT						94.0			
10+40.8 TO 11+55.6	14.0 LT	162								
10+58.95	9.8' LT TO 11.8' RT	22								
10+58.95 TO 11+74.20	L/R						221.3			
10+58.95 TO 11+74.20	14' RT	115					13.0			
11+74.20 TO 11+81.54	LT/RT					25.0				COMPOSITE PAVEMENT
TOTALS		361	4747	505	549	395	563	3472	2857	

D	INPLACE STORM DRAINAGE STRUCTURES						
				REMOVE	REMOVE	SALVAGE	
				SEWER	CATCH	FRAME AND	
			STRUCTURE	PIPE (STORM)	BASIN	CASTING RING	
LOCATION	OFFSET	L / R	NO.	2104	2104	2104	REMARKS
				LIN FT	EACH	EACH	
KENWOOD AVENUE S.A.P. 118-151-013							
76+82.3	20.7	LT	ICB 33			1	SALVAGE FRAME AND CASTING RING
76+83.5	22.0	RT	ICB 34			1	SALVAGE FRAME AND CASTING RING
INPLACE LYONS							
11+89.16	16.0	RT	ISMH 48			1	SALVAGE FRAME AND CASTING RING
11+71.75	13.2	RT	ICB 32	4			REMOVE PIPE TO ISMH 48
INPLACE LYONS STREET	C.O.D. PROJ 1602						
11+71.75	13.2	RT	ICB 32	30	1	1	REMOVE PIPE TO ISMH 48
11+71.75	13.2	LT	ICB 31	17	1	1	REMOVE PIPE TO ISMH 48
11+92.9	35.0	RT	ICB 30				ADJUST
			TOTALS	51	2	5	

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SIGNATURE: Duncan C. Schwensohn

DUNCAN SCHWENSOHN
TYPE NAME

DATE: 6/13/2017

LIC. NO: 45486



CITY OF DULUTH
ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
DULUTH, MN 55802

KENWOOD AVE MILL & OVERLAY

CITY PROJECT NO.: 1602 STATE AID PROJECT NO.: 118-151-013

DRAWN BY: DJK/SCA/BRC

CHARTS

SHEET NO. 005 OF 35

I:\PWU\ENGINEER\PROJECTS\1500-1999\1602_kenwood & college_mill & overlay\23-acad-drawings\1602_tabs.dwg

E	SUBBASE, AGGREGATE BASE AND BITUMINOUS			
	SELECT		TYPE SP 9.5	
	GRANULAR	AGGREGATE	WEARING	GEOTEXTILE
	BORROW	BASE	COURSE	FABRIC SPECIAL
	7% MODIFIED (CV) (P)	CLASS 5 (CV) (P)	MIXTURE (3,C)	TYPE V (P)
STATION	2105	2211	2360	2105
	CU YD	CU YD	TON	SQ YD
S.A.P. 118-151-013				
KENWOOD AVE.				
75+91.0 TO 83+74.90		20	882	
79+95.24 TO 79+98.47		10	16	
LYONS STREET				
4+31.23 TO 4+48.56	15	10	7	30
C.O.D. PROJ 1602				
LYONS STREET				
3+05.80 TO 4+31.23	125	75	61	335
TOTALS	140	115	966	365

F	PROPOSED DRAINAGE STRUCTURES & PIPES																		
					12" RC			CONSTRUCT											
				12" CP	PIPE SEWER	CONNECT	CONSTRUCT	72" DRAINAGE		ADJUST	CONCRETE								
				PIPE	DES 3006	TO	DRAINAGE	STURUCTURE	INSTALL	FRAME &	ENCASED								
				SEWER	CL III	EXISTING	STRUCTURE	DESIGN	CASTING	RING	CASTING						PIPE		
				L.F.	L.F.	MANHOLE	DESIGN G	SPECIAL	ASSMBLY	CASTING	COLLAR	RIM	FROM	TO	UPSTREAM	DOWNSTREAM	SLOPE	NORTHING	EASTING
STRUCTURE	STATION	OFFSET	L / R	2503	2503	2503	2506	2506	2506	2506	2506	ELEV	STRUCTURE	STRUCTURE	INVERT	INVERT	FT/FT	COORDINATE	COORDINATE
NO.				LF	LF	EACH	EACH	EACH	EACH	EACH	EACH							Y	X
LYONS STREET C.O.D. PROJ 1602																			
PMH/CB 133	3+91.17	8'	RT					1	1			1195.16						3354018.625	4844805.58
PCB 161	3+91.27	8'	LT				1		1			1195.17						3354002.691	4844803.80
PCB 162	3+63.84	8.8'	LT				1		1			1195.28						3354003.495	4844833.36
PCB 163	3+63.83	11.7'	RT				1		1			1195.41						3354023.783	484430.02
ICB 30	4+58.92	17.8'	RT							1									
PIPES																			
133				40									PMH/CB 133	IMH 48	1191.19	1190.21	0.02		
161					16								PCB 161	PMH/CB 133	1191.60	1191.28	0.02		
162					30								PCB 162	PCB 161	1192.30	1191.71	0.02		
163					25								PCB 163	PMH/CB 133	1191.79	1191.28	0.02		
LYONS STREET S.A.P. 118-151-013																			
ISMH 48	4+44.6	5.30	RT			1				1	1							3354036.441	4844759.74
PIPES																			
133				9															
KENWOOD AVE.																			
ICB 33	76+82.3	20.7'	LT						1										
ICB 34	76+83.5	22'	RT						1										
ICB 29	80+84.7	21.3'	LT							1									
			TOTALS	49	71	1	3	1	6	3	1								

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DUNCAN SCHWENSOHN
TYPE NAME

DATE: 6/13/2017

LIC. NO: 45486



CITY OF DULUTH
ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
DULUTH, MN 55802

KENWOOD AVE MILL & OVERLAY

CITY PROJECT NO.: 1602

STATE AID PROJECT NO.: 118-151-013

DRAWN BY: DJK/SCA/BRC

CHARTS

SHEET NO. 006 OF 35

I:\PW\ENGINEER\PROJECTS\1500-1999\1602_kenwood_&_college_mill_&_overlay\23-acad-drawings\1602_Tabs.dwg

G		PROPOSED CONCRETE WORK							
			PLACE			CONCRETE	CONCRETE	8"	
		STRUCTURAL	CONCRETE	TRUNCATED	6" CONCRETE	& GUTTER	& GUTTER	CONCRETE	
		CONCRETE	PAVEMENT	DOMES	WALK	DESIGN	DESIGN - B624	VALLEY	
						B624	(MODIFIED)	GUTTER	
STATION	LT/RT	2301	2301	2531	2521	2531	2531	2531.00	REMARKS
		CY	SY	SQ FT	SQ FT	LIN FT	LIN FT	LIN FT	
KENWOOD AVENUE - S.A.P									
75+91.00 TO 79+64.67	22.1' LT TO 46.9' LT						395		
75+91.00 TO 79+34.96	LT				2065				
79+34.96 TO 79+58.32	25.5' LT TO 35.2' LT			33	158				ADA
79+37.0 TO 83+74.67	22' LT	20	97		71				2' W x 875.3'
79+52.96 TO 80+01.28	22.1' LT							48.50	
79+58.32 TO 79+60.49	35.2' LT TO 46.9' LT				71				
79+90.45 TO 83+74.95	47.1' LT TO 24.9' LT						401		
79+98.29 TO 80+11.30	32' LT TO 26.5' LT			24	104				ADA
80+11.3 TO 80+21.3	26.4' LT TO 25.3' LT				64				
80+21.23 TO 83+74.67	25.3' LT				2123				
LYONS - CONST									
4+31.23 TO 4+74.24	LT					47			
4+31.23 TO 4+74.24	RT					32			
LYONS - CONST - C.O.D. PROJ. 1602									
2+58.08 TO 4+31.23	LT					140			
3+04.15 TO 4+31.23	RT					132			
TOTALS		20	97	57	4656	351	796	49	

H		SUBSURFACE DRAINS			
LOCATION				4" PERF PVC	
				PIPE DRAIN	DRAINS
				2502	TO
FROM STATION	OFFSET	TO STATION	OFFSET	L.F.	
LYONS CONST - C.O.D. PROJ. 1602					
3+04.0	15.5 RT	3+62.5	15.5 RT	62.0	PCB 162
3+04.0	15.0 LT	3+62.5	15 LT	57.0	PCB 163
3+67.0	13.4 RT	3+89.0	10.4 RT	20.0	PCB 161
3+64.0 LT	10.7 LT	3+90.8	9.7 LT		PCBMH 133
4+50.5	13.8 LT	3+92.8	10.7 LT	42.0	PCBMH 133
4+34.3 LT	10.7 RT	3+91.6	9.7 RT	30.0	PCB 161
LYONS CONST - S.A.P. 1118-151-013					
4+31.23	10.7 RT	4+47.50	13.80	18.0	PCBMH 133
4+31.23	10.7 LT	4+47.50	10.7 LT	11.0	OCB 161
TOTALS				240.0	

I		TEMPORARY EROSION CONTROL				
				STORM	STABILIZED	
				SILT FENCE	DRAIN	CONSTRUCTION
				TYPE	INLET	EXIT
				HI	PROTECTION	(ROCK)
STATION	OFFSET	L / R	2573	2573	2573	REMARKS
			LIN FT	EACH	SQ YD	
KENWOOD AVENUE S.A.P. 118-151-013						
76+82.4	20.7	LT		1		ICB 33
76+83.5	22.0	RT		1		ICB 34
80+84.7	21.0	LT		1		ICB 29
INPLACE LYONS						
11+92.9	35.0	RT		1		ICB 30
11+95	NA	LT/RT			1	
INPLACE LYONS ST. C.O.D. PROJ 1602						
10+08 TO 11+93	16 TO 22	LT	175			
		TOTALS	175	4	1	

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SIGNATURE: Duncan C. Schwensohn

DUNCAN SCHWENSOHN
TYPE NAME

DATE: 6/13/2017

LIC. NO: 45486



CITY OF DULUTH
ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
DULUTH, MN 55802

KENWOOD AVE MILL & OVERLAY

CITY PROJECT NO.: 1602

STATE AID PROJECT NO.: 118-151-013

DRAWN BY: DJK/SCA/BRC

CHARTS

SHEET NO. 007 OF 35

J		PAVEMENT MARKINGS								
LOCATION				INTERIM	PAVEMENT		4" DOUBLE	24" SOLID LINE	CROSSWALK	REMARKS
								PREFORM		
FROM STATION	OFFSET	TO STATION	OFFSET	PAVEMENT	MESSAGE	4" SOLID LINE	SOLID LINE	EPOXY	THERMOPLASTIC	
				MARKING	EPOXY	EPOXY	EPOXY		GROUND IN	
				2580	2582	2582	2582	2582	2582	
KENWOOD AVE - S.A.P 118-151-013				L.F.	S.F.	L.F.	L.F.	L.F.	S.F.	
75+91.0	0.00	79+33.0	0.00	342			342			CENTERLINE
80+16.0	0.00	83+90.0	0.00	374			374			CENTERLINE
75+91.0	11.3' LT/RT	79+33.0	11.3' LT/RT	140		140				10' STRIPE @ 40' SPACING
80+16.0	11.3' LT/RT	83+90.0	11.3' LT/RT	160		160				10' STRIPE @ 40' SPACING
79+36.4	1.0' RT	—	21.0' RT					20		STOP BAR
79+65.3	37.9' LT	79+77.3	37.9' LT					12		STOP BAR
79+72.0	49.2' RT	79+92.0	49.2' RT					20		STOP BAR
80+13.6	1.0' LT	—	21.0' LT					20		STOP BAR
PAVEMENT MESSAGE - (SEE SHEET 31 FOR PLAN LOCATIONS)										
75+98.7	18.0' LT/RT	79+23.1	18.0' LT/RT		30					(4) SHARROW
80+90.8	18.0' LT/RT	83+70.2	18.0' LT/RT		30					(4) SHARROW
CROSSWALK										
79+46.9	22.0' LT	—	22.0' RT						144	3' X 6' sp@ 6' o.c.
79+60.0	27.2' LT	79+96.0	27.2' LT						105	2.5' X 6' sp@ 5' o.c.
79+53.7	39.2' RT	79+93.0	39.2' RT						120	2.5' X 6' sp@ 5' o.c.
80+00.5	23.0' LT	—	23.0' RT						210	3' x 10' sp@ 6' o.c.
LYONS STREET - C.O.D. PROJ. 1602										
4+34.0	7.0' LT	—	7.0' RT					14		STOP BAR
				TOTALS	1016	61	300	716	86	579

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DATE: 6/13/2017



CITY OF DULUTH
ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
DULUTH, MN 55802

KENWOOD AVE MILL & OVERLAY

CITY PROJECT NO.: 1602

STATE AID PROJECT NO.: 118-151-013

DRAWN BY: DJK/SCA/BRC

CHARTS

SHEET NO. 008 OF 35

SIGNATURE: Duncan C. G. [Signature]

DUNCAN SCHWENSOHN
TYPE NAME

LIC. NO: 45486

I:\PWU\ENGINEER\PROJECTS\1500-1999\1602_Kenwood_Mill_Overlay\23-ACAD-DRAWINGS\1602_Tabs.dwg

K	SIGNS						
SIGN DESCRIPTION	LOCATION		REMOVE	RELOCATE	INSTALL SIGN	SIGN PANELS	
			SIGN	SIGN	TYPE C	TYPE C	
			2104	2564	2564	2564	REMARKS
	STATION	OFFSET	EACH	EACH	EACH	S.F.	
LYONS STREET - INPLACE STATIONING							
S.A.P. 118-151-013							
NO TURN ON RED	11+68.0	21.6' RT	1				NO TURN ON RED
STREET SIGN	11+82.4	28.8' LT					LYONS / KENWOOD
LYONS ST. CONSTRUCTION							
STOP SIGN	4+33	12.75' RT			1	6.3	STOP (R1-1)
NO LEFT TURN	4+33	12.75' RT				4.0	24 X 24 - (R3--2)
LYONS STREET - CONSTRUCTION STATIONING							
C.O.D. PROJ. 1602							
NO RIGHT TURN	4+25.1	25.1 ' RT			1	4.0	24 X 24 - (R3-1)
STREET SIGN	4+27.6	18.5' LT		1			LYONS / KENWOOD
DO NOT ENTER	4+31.2	16.7' LT			1	6.3	30 X 30 - (R5-1)
		TOTALS	1	1	3	20.6	

L		PERMANENT TURF RESTORATION		
		SODDING		
		TYPE LAWN		
STATION	L / R	2575		
		S.Y.		
KENWOOD AVENUE - S.A.P. 118-151-013				
75+91 TO 79+58	L	70		
80+02 TO 83+75	R	70		
LYONS STREET - CONST				
2+58 TO 4+31.5	L	64		
3+05 TO 4+31.5	R	175		
LYONS STREET - CONST - C.O.D. PROJ. 1602				
4+31.23 TO 4+63	L	33		
4+31.23 TO 4+63	R	17		
	TOTALS	429		

M		CASTING ASSEMBLIES					
TYPE OF CASTING	A	B	C		D		
TYPE OF ASSEMBLY	STORM MH	SANITARY MH	CATCH BASIN		CATCH BASIN - LOW POINT		
CASTING DESCRIPTION	FRAME & LID	FRAME & LID	FRAME	GRATE	FRAME	GRATE	CURB BOX
CASTING NUMBER				816		816	823
STANDARD PLATE NUMBER	CITY 5010	CITY 5020	CITY 5005	4154B	CITY 5002	4154B	4160D
HEIGHT IN FEET	0.67	0.67	0.78	N/A	0.78	N/A	1.05
NUMBER REQUIRED	1	1	2	2	4	4	4

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KENWOOD AVE MILL & OVERLAY

CITY PROJECT NO.: 1602

STATE AID PROJECT NO.: 118-151-013

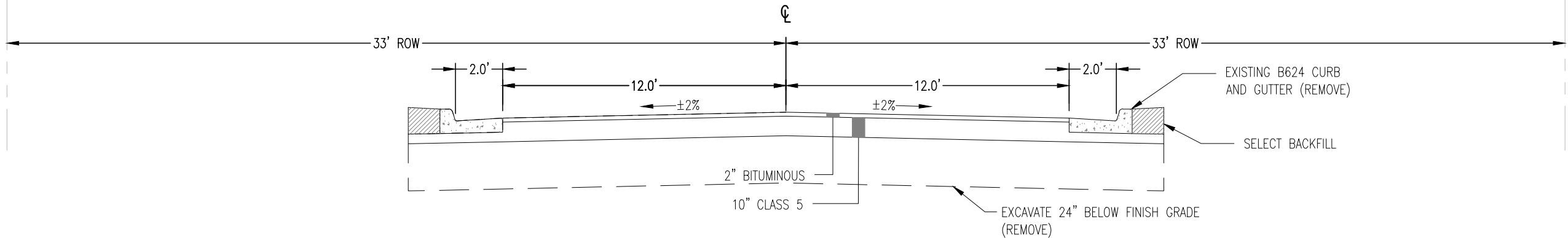
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CHARTS

SHEET NO. 009 OF 35

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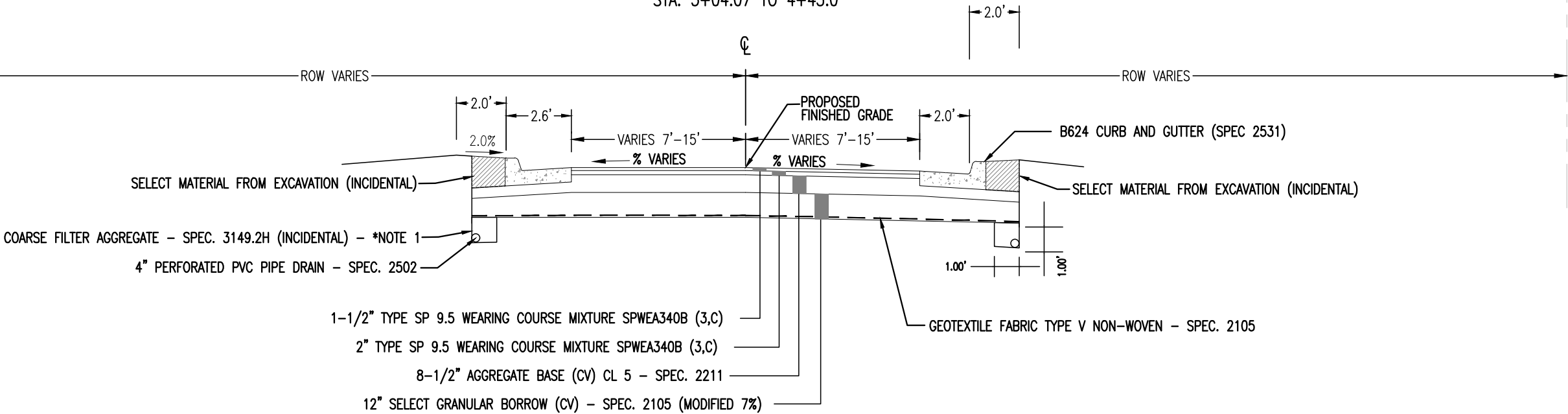
INPLACE TYPICAL SECTION
LYONS STREET
INPLACE STA. 10+12 TO 11+91.7



NOTE:
LYONS STREET REMOVALS REFERENCE INPLACE STATIONING.
ALL PROPOSED CONSTRUCTION ON LYONS STREET REFERENCES
THE LYONS STREET CONSTRUCTION ALIGNMENT.

(TYPICAL IS REFERENCED FROM CITY PROJECT #6539 - 1963)

PROPOSED TYPICAL SECTION
LYONS STREET - CONSTRUCTION ALIGNMENT
STA. 3+04.07 TO 4+45.0



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ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
DULUTH, MN 55802

KENWOOD AVE MILL & OVERLAY

CITY PROJECT NO.: 1602

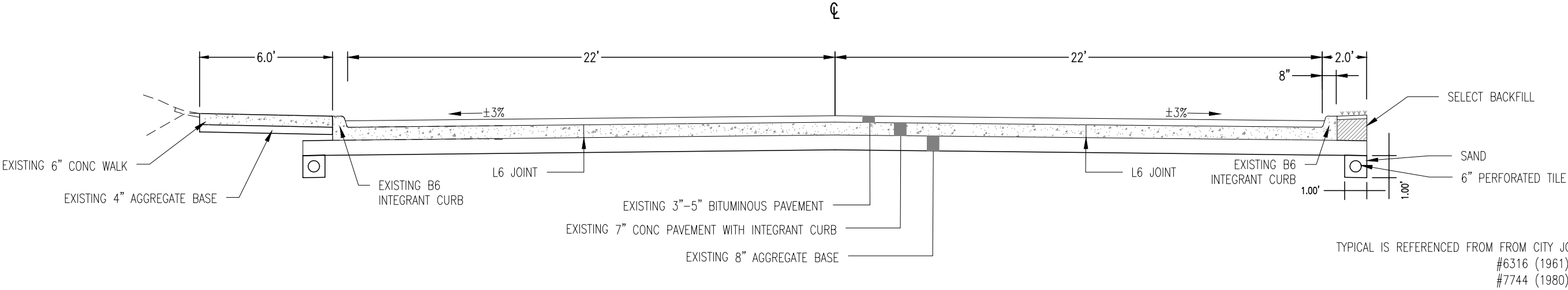
STATE AID PROJECT NO.: 118-151-013

DRAWN BY: DJK/SCA/BRC

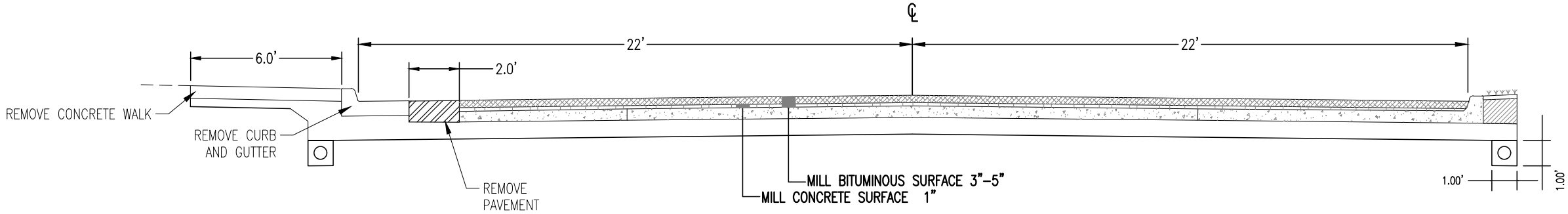
TYPICAL SECTIONS

SHEET NO. 010 OF 35

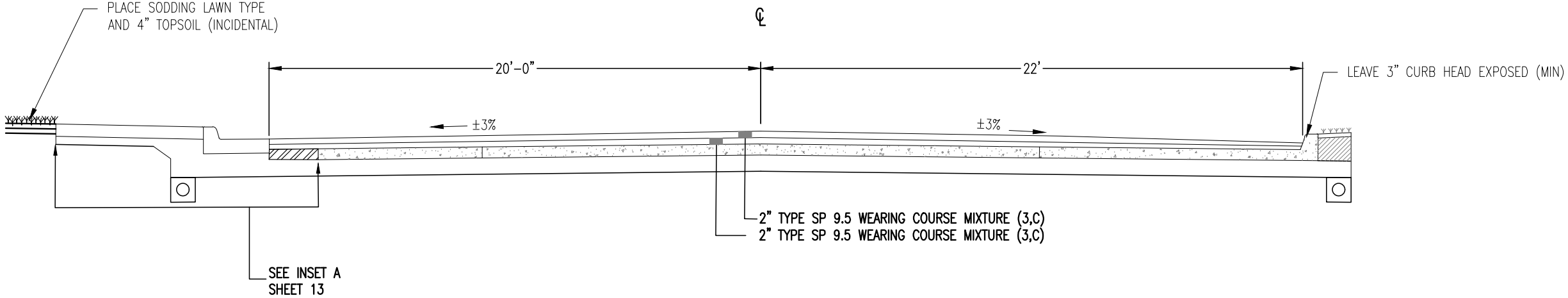
KENWOOD AVE
INPLACE TYPICAL SECTION
APPLIES:
STA. 79+36.7 TO 83+74.72



PROPOSED REMOVALS TYPICAL



PROPOSED TYPICAL SECTION



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DULUTH, MN 55802

KENWOOD AVE MILL & OVERLAY

CITY PROJECT NO.: 1602

STATE AID PROJECT NO.: 118-151-013

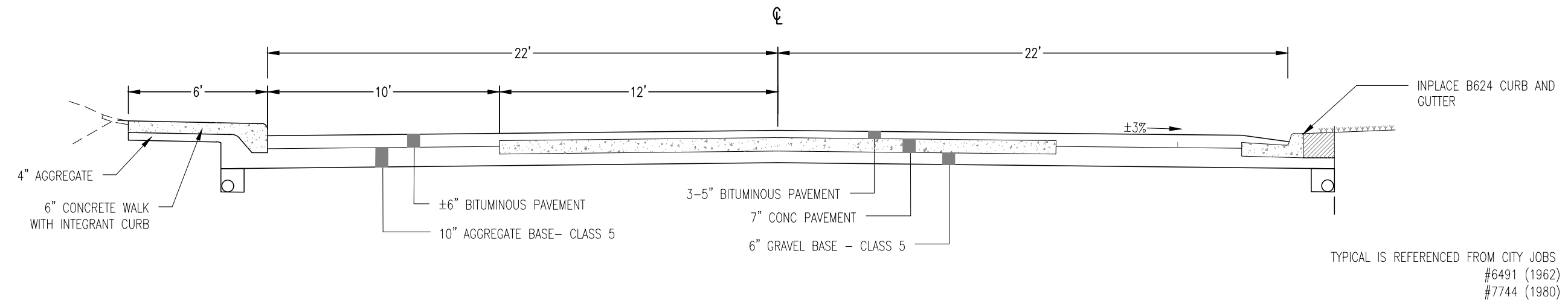
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TYPICAL SECTIONS

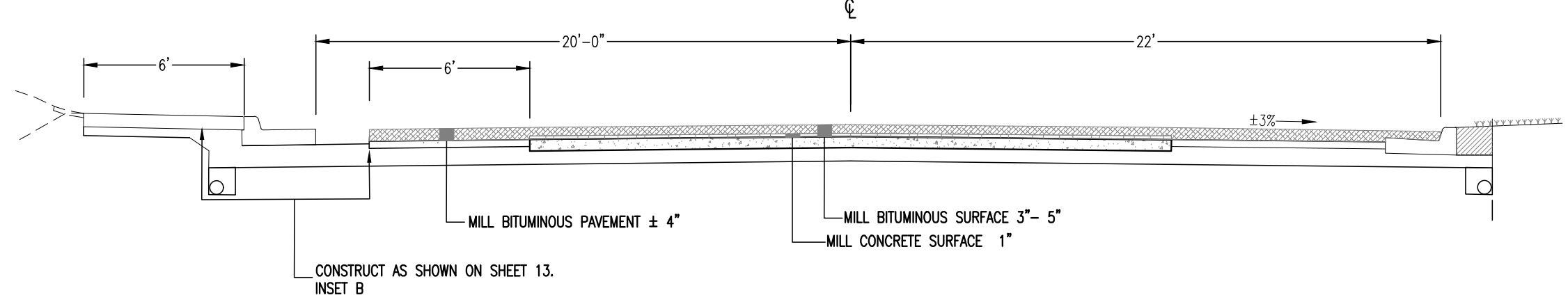
SHEET NO. 011 OF 35

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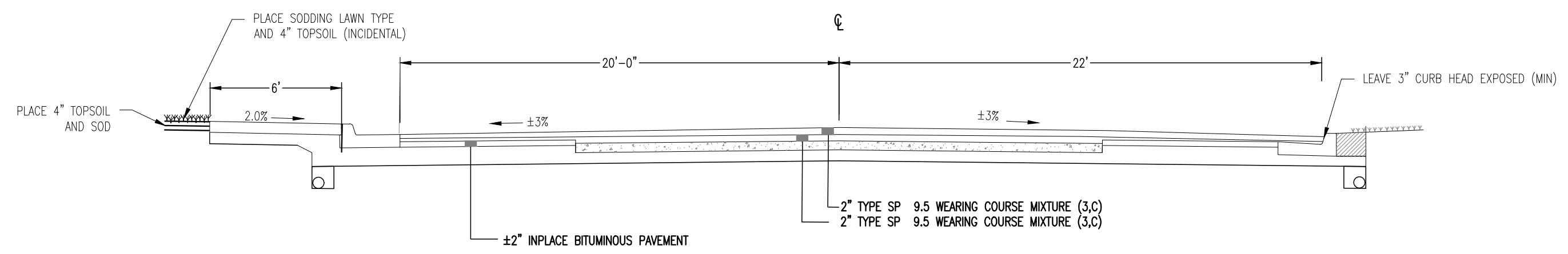
KENWOOD AVE
INPLACE TYPICAL SECTION
APPLIES: 75+91.0 TO 79+36.7



MILLED TYPICAL SECTION



PROPOSED TYPICAL SECTION



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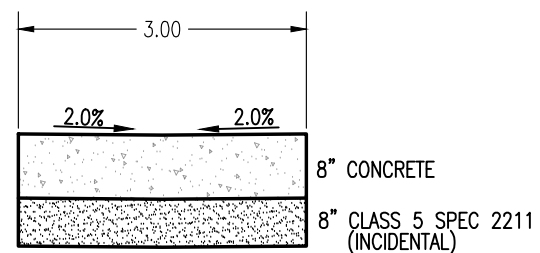
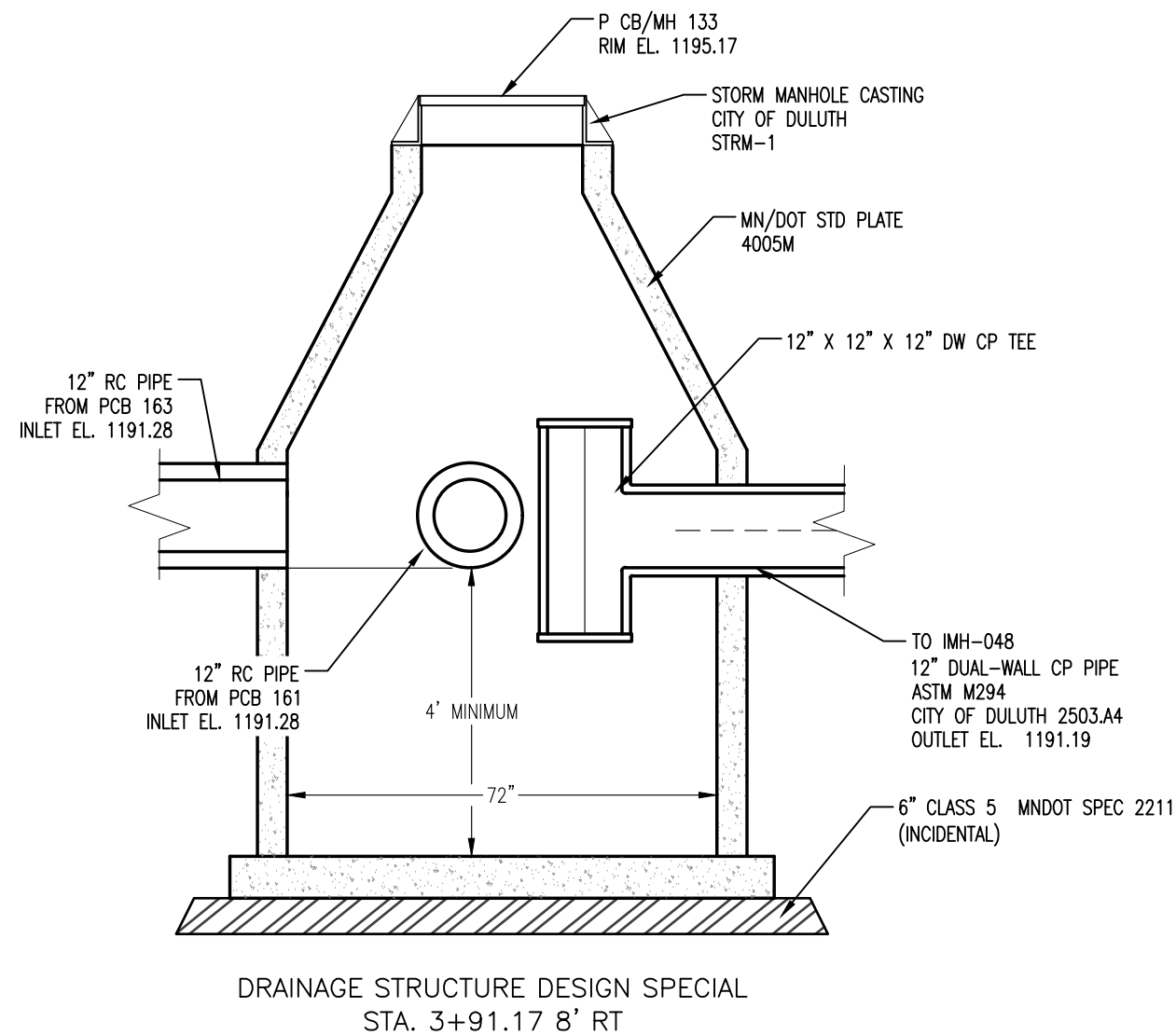


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411 W. 1ST ST. STE. 211
DULUTH, MN 55802

KENWOOD AVE MILL & OVERLAY

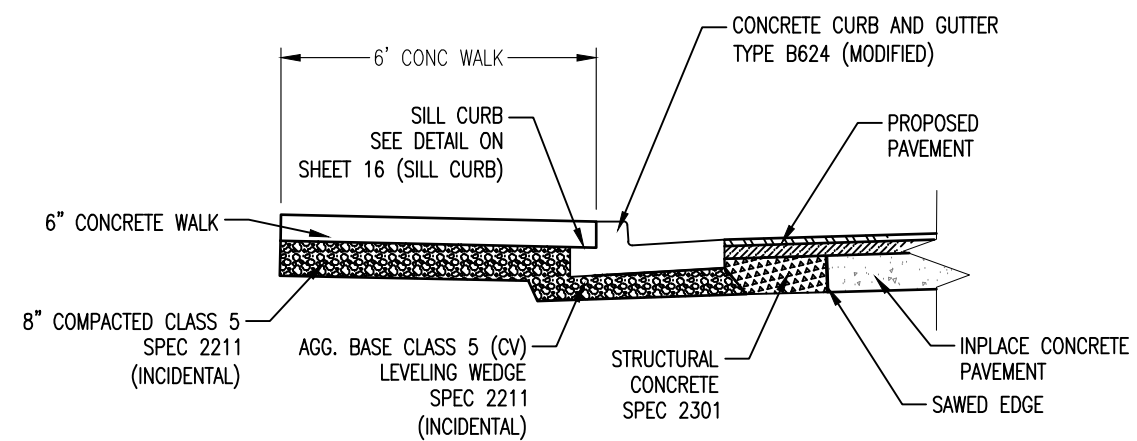
CITY PROJECT NO.: 1602 STATE AID PROJECT NO.: 118-151-013

DRAWN BY: DJK/SCA/BRC
TYPICAL SECTIONS
SHEET NO. 012 OF 35



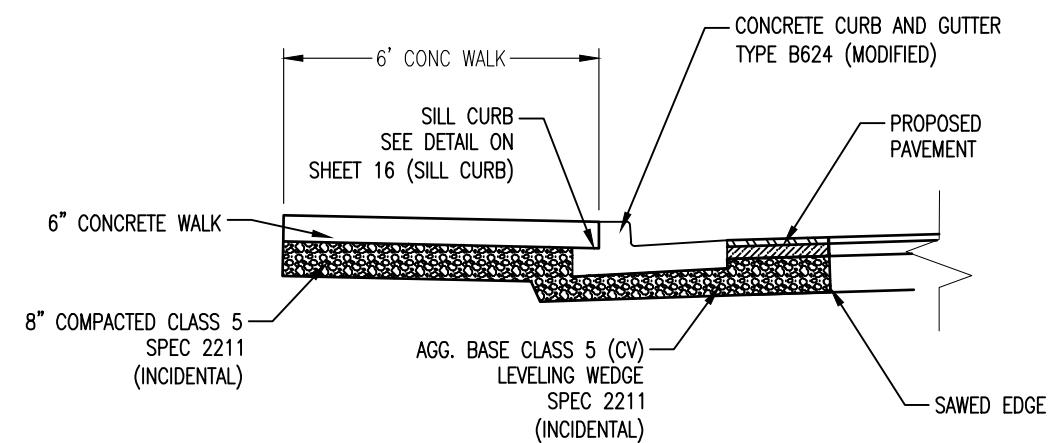
8" CONCRETE VALLEY CURB DETAIL
MN/DOT SPEC 2531.604

INSET A



PROPOSED CONCRETE CURB AND GUTTER DES
NO SCALE

INSET B



PROPOSED CONCRETE CURB AND GUTTER DESIGN SPECIAL
NO SCALE

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.

SIGNATURE: _____

DUNCAN SCHWENSOHN
TYPE NAME

DATE: 6/13/2017

LIC. NO: 45486



CITY OF DULUTH
ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
DULUTH, MN 55802

KENWOOD AVE MILL & OVERLAY

CITY PROJECT NO.: 1602

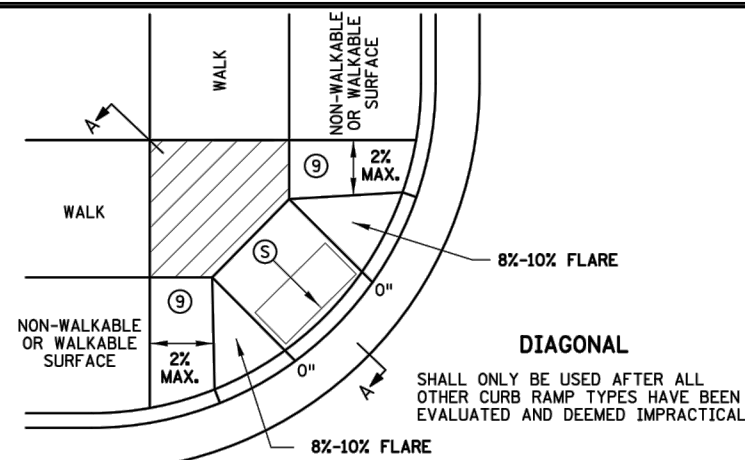
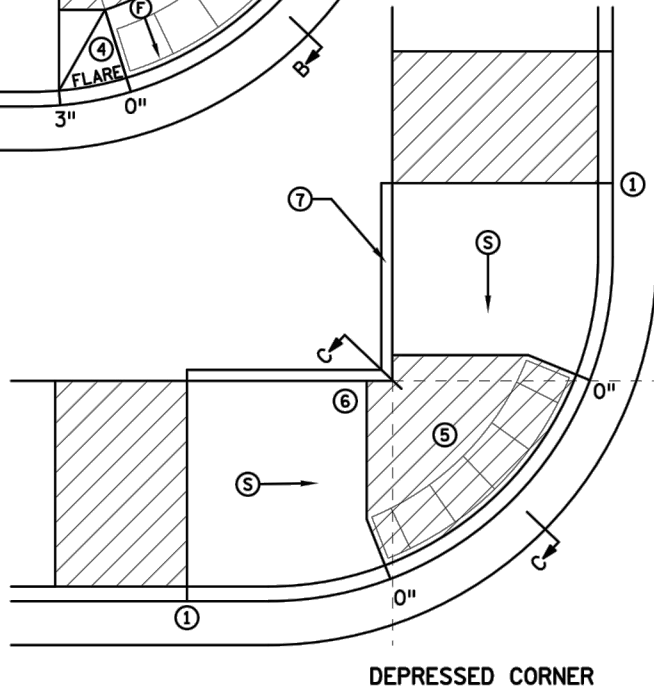
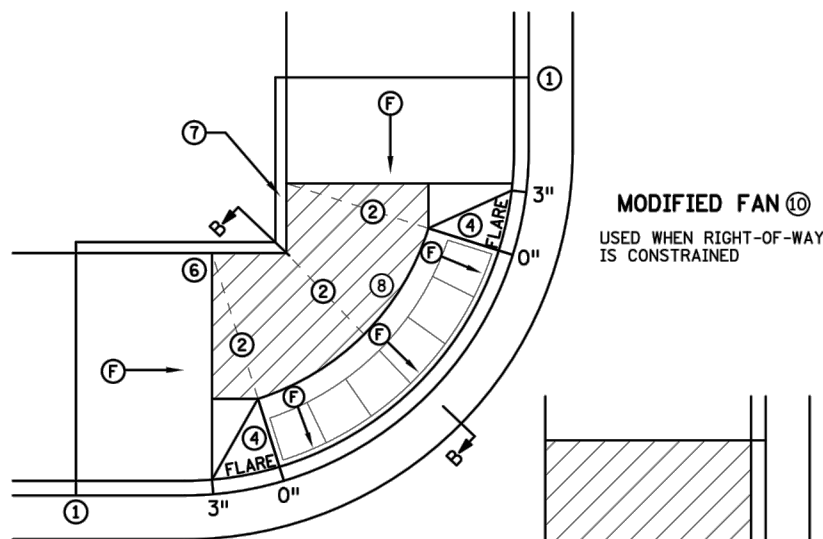
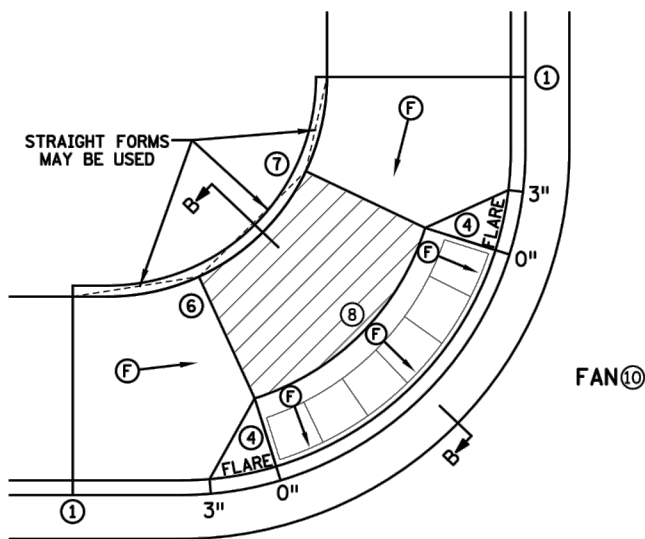
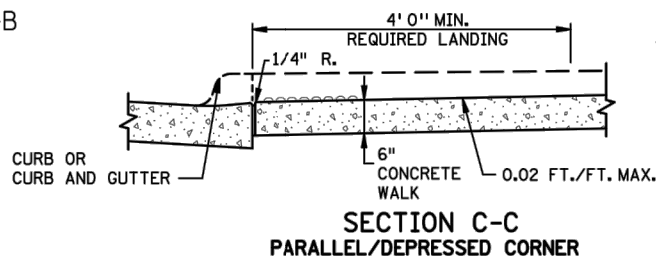
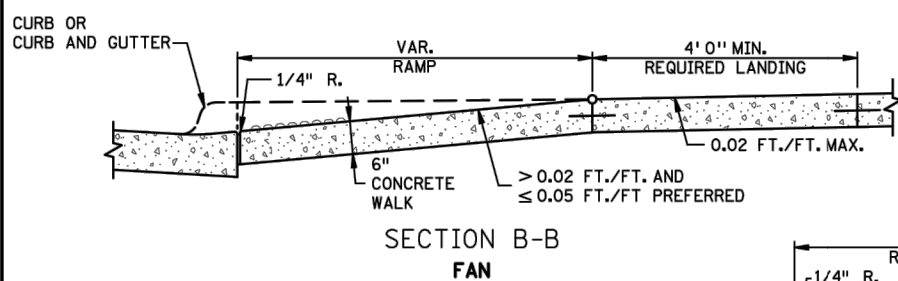
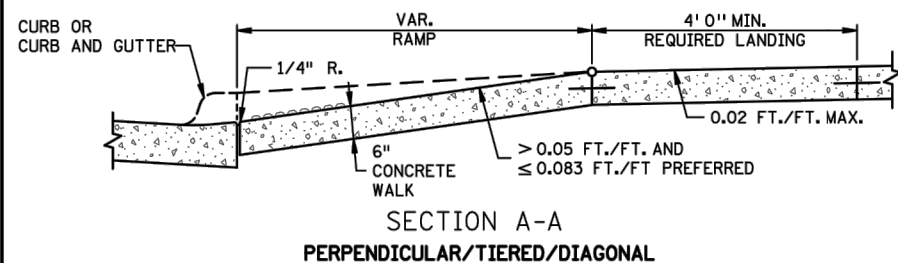
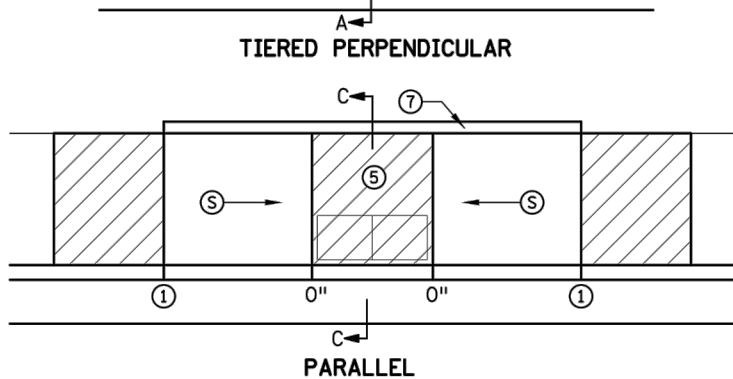
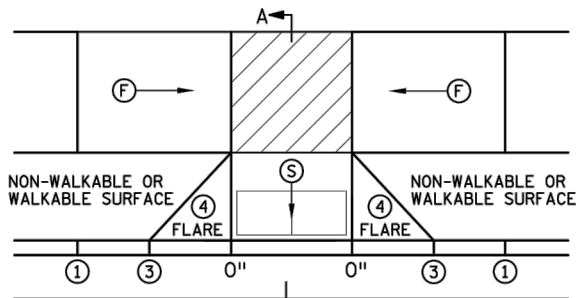
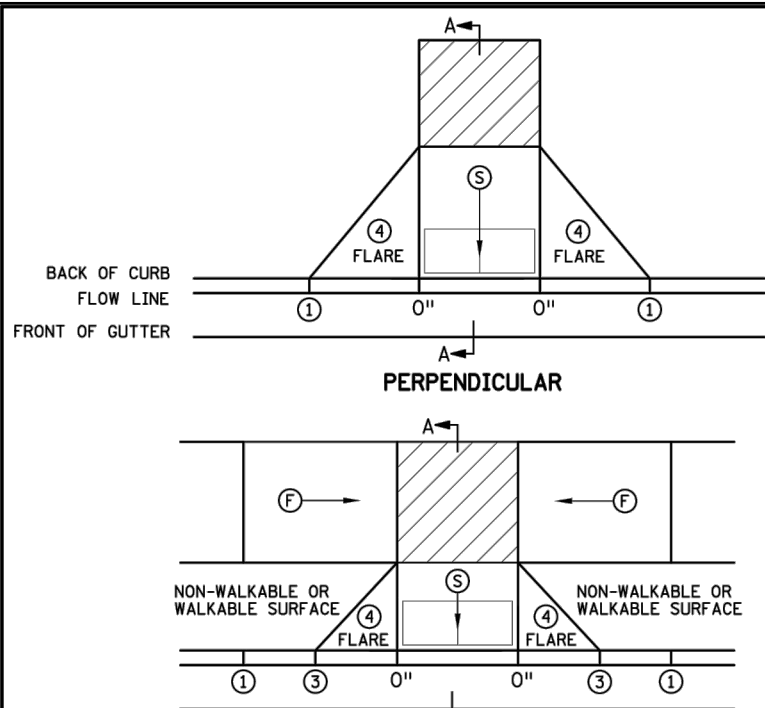
STATE AID PROJECT NO.: 118-151-013

DRAWN BY: DJK/SCA/BRC

CONSTRUCTION DETAILS

SHEET NO. 013 OF 35

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NOTES:

LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE (PAR) CHANGES DIRECTION, AT THE TOP OF RAMP THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE GREATER THAN 2%.

INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE, ONLY APPLICABLE WHEN THE INITIAL RAMP RUNNING SLOPE IS OVER 5.0%.

SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30" OF VERTICAL RISE WHEN THE LONGITUDINAL RUNNING SLOPE IS GREATER THAN 5.0%.

CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PAR. 1/4" DEEP VISUAL JOINTS SHALL BE USED AT THE TOPS OF CONCRETE FLARES ADJACENT TO WALKABLE SURFACES.

ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL, THUS BOTH SIDES OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH. (EXCEPT AS STATED IN 6) BELOW.

TO ENSURE INITIAL RAMP AND INITIAL LANDINGS ARE PROPERLY CONSTRUCTED, LANDINGS SHALL BE CAST SEPARATELY, FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 6 AND THE ADA SPECIAL PROVISIONS - PROSECUTION OF WORK (ADA).

TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

WHEN THE BOULEVARD IS 4' WIDE OR LESS, THE TOP OF CURB TAPER SHALL MATCH THE RAMP SLOPES TO REDUCE NEGATIVE BOULEVARD SLOPES FROM THE TOP BACK OF CURB TO THE PAR.

ALL RAMP TYPES SHOULD HAVE A MINIMUM 3' LONG RAMP LENGTH.

4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMP. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER ENTIRE WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK. DETECTABLE WARNING SHOULD BE 6" LESS THAN THE PAR/TRAIL WIDTH. ARC LENGTH OF RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.

RECTANGULAR DETECTABLE WARNINGS SHALL BE SETBACK 3" FROM THE BACK OF CURB. RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB.

- 1 MATCH FULL HEIGHT CURB.
- 2 4' MINIMUM DEPTH LANDING REQUIRED ACROSS TOP OF RAMP.
- 3 3" HIGH CURB WHEN USING A 3' LONG RAMP, 4" HIGH CURB WHEN USING A 4' LONG RAMP.
- 4 SEE SHEET 4 OF 6, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS, WHEN INITIAL LANDING IS AT FULL CURB HEIGHT.
- 5 DETECTABLE WARNINGS MAY BE PART OF THE 4' X 4' MIN. LANDING AREA IF IT IS NOT FEASIBLE TO CONSTRUCT THE LANDING OUTSIDE OF THE DETECTABLE WARNING AREA.
- 6 THE GRADE BREAK SHALL BE PERPENDICULAR TO THE BACK OF WALK. THIS WILL ENSURE THAT THE GRADE BREAK IS PERPENDICULAR TO THE DIRECTION OF TRAVEL. (TYPICAL FOR ALL)
- 7 WHEN ADJACENT TO GRASS, GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.
- 8 A 7' MIN TOP RADIUS GRADE BREAK REQUIRED TO BE CONSTRUCTIBLE.
- 9 PAVE FULL WALK WIDTH.
- 10 "S" SLOPES ON FANS SHALL ONLY BE USED WHEN ALL OTHER FEASIBLE OPTIONS HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL.

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

REVISION:

APPROVED: JANUARY 23, 2017

OPERATIONS ENGINEER

REVISION:

APPROVED:

1-23-2017

STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250

1 OF 6

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

SIGNATURE: *Duncan C. Schwensohn*

DUNCAN SCHWENSOHN
TYPE NAME

DATE: 6/13/2017

LIC. NO: 45486



CITY OF DULUTH
ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
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KENWOOD AVE MILL & OVERLAY

CITY PROJECT NO.: 1602

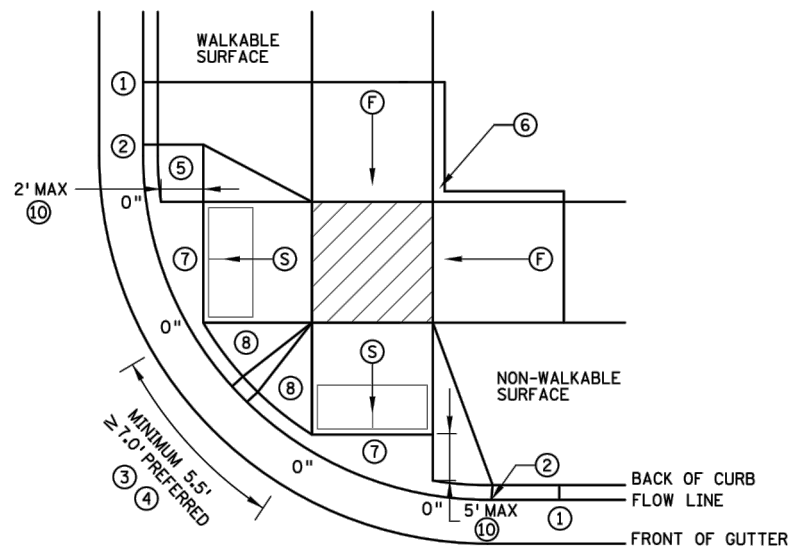
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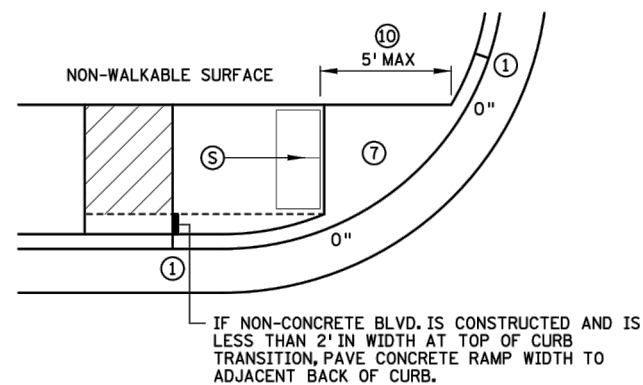
STD PLAN 1 OF 6

SHEET NO. 014 OF 35

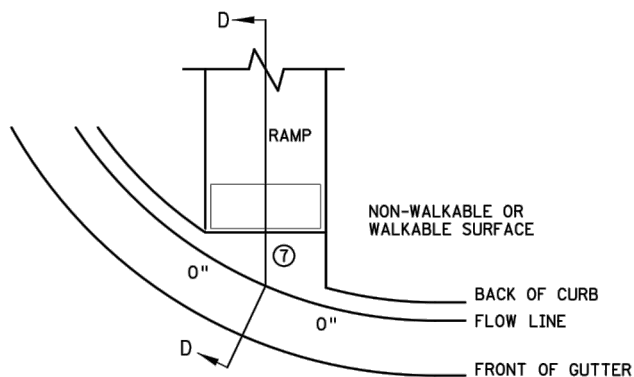
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COMBINED DIRECTIONAL ⑨

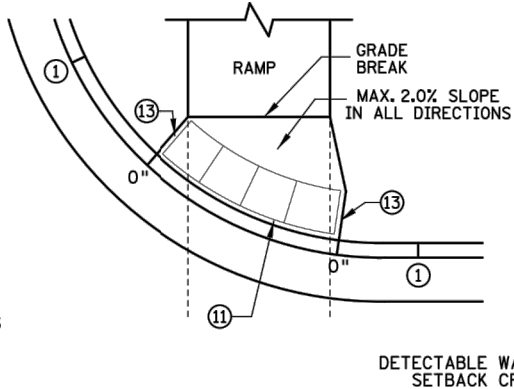


STANDARD ONE-WAY DIRECTIONAL ⑨

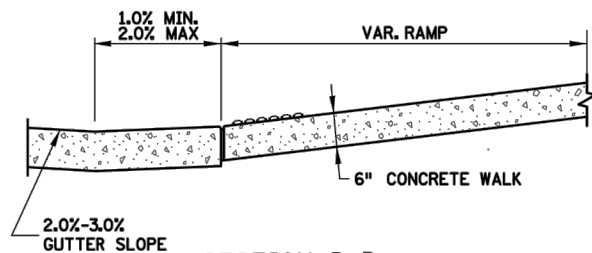


CURB FOR DIRECTIONAL RAMPS ⑭

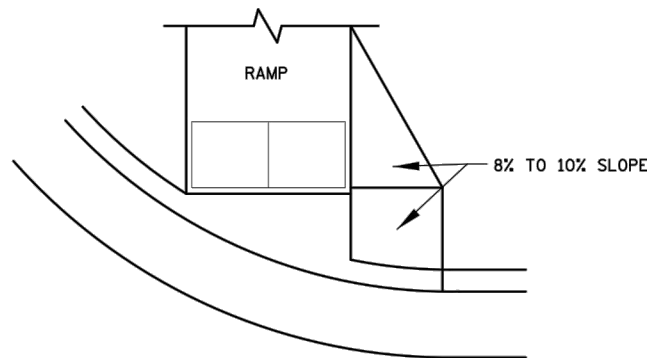
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APPROVED: JANUARY 23, 2017
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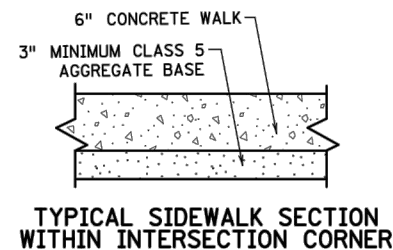
ONE-WAY DIRECTIONAL WITH DETECTABLE WARNING AT BACK OF CURB



SECTION D-D



DIRECTIONAL RAMP WALKABLE FLARE



TYPICAL SIDEWALK SECTION WITHIN INTERSECTION CORNER

NOTES:

LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE (PAR) CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE.

INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE, ONLY APPLICABLE WHEN THE INITIAL RAMP RUNNING SLOPE IS OVER 5.0%.

SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30" OF VERTICAL RISE WHEN THE LONGITUDINAL SLOPE IS GREATER THAN 5.0%.

CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PAR. 1/4" DEEP VISUAL JOINTS SHALL BE USED AT THE TOP GRADE BREAK OF CONCRETE FLARES ADJACENT TO WALKABLE SURFACES.

ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL. THUS BOTH SIDES OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH.

TO ENSURE INITIAL RAMPS AND INITIAL LANDINGS ARE PROPERLY CONSTRUCTED, LANDINGS SHALL BE CAST SEPARATELY. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 6 AND THE ADA SPECIAL PROVISION (PROSECUTION OF WORK).

TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

WHEN THE BOULEVARD IS 4' WIDE OR LESS, THE TOP OF CURB TAPER SHALL MATCH THE RAMP SLOPES TO REDUCE NEGATIVE BOULEVARD SLOPES FROM THE TOP BACK OF CURB TO THE PAR.

ALL RAMP TYPES SHOULD HAVE A MINIMUM 3' LONG RAMP LENGTH.

4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER ENTIRE WIDTH OF SHARED-USE PATH AND THE ENTIRE PAR WIDTH OF THE WALK. DETECTABLE WARNING SHOULD BE 6" LESS THAN THE PAR/PATH WIDTH. ARC LENGTH OF RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.

RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB. SEE NOTES ⑩ & ⑪ FOR INFORMATION REGARDING RECTANGULAR DETECTABLE WARNING PLACEMENT.

- ① MATCH FULL CURB HEIGHT.
- ② 3" HIGH CURB WHEN USING A 3' LONG RAMP
4" HIGH CURB WHEN USING A 4' LONG RAMP.
- ③ 3" MINIMUM CURB HEIGHT (5.5' MIN. DISTANCE REQUIRED BETWEEN DOMES)
4" PREFERRED (7' MIN. DISTANCE REQUIRED BETWEEN DOMES).
- ④ THE "BUMP" IN BETWEEN THE RAMPS SHOULD NOT BE IN THE PATH OF TRAVEL FOR COMBINED DIRECTIONAL RAMPS. IF THIS OCCURS MODIFY THE RAMP LOCATION OR SWITCH RAMP TO A FAN/DEPRESSED CORNER.
- ⑤ WHEN USING CONCRETE PAVED FLARES ON THE OUTSIDE OF DIRECTIONAL RAMPS, AND ADJACENT TO A WALKABLE SURFACE, DIRECTIONAL RAMP FLARES SHOULD BE USED. SEE THE DETAIL ON THIS SHEET.
- ⑥ GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.
- ⑦ MAX. 2.0% SLOPE IN ALL DIRECTIONS IN FRONT OF GRADE BREAK AND DRAIN TO FLOW LINE. SHALL BE CONSTRUCTED INTEGRAL WITH CURB AND GUTTER.
- ⑧ 8% TO 10% WALKABLE FLARE.
- ⑨ PLACE DOMES AT THE BACK OF CURB WHEN ALLOWABLE SETBACK CRITERIA IS EXCEEDED.
- ⑩ FRONT EDGE OF DETECTABLE WARNING SHALL BE SET BACK 2' MAXIMUM WHEN ADJACENT TO WALKABLE SURFACE, AND 5' MAXIMUM WHEN ADJACENT TO NON-WALKABLE SURFACE WITH ONE CORNER SET 3" FROM BACK OF CURB. A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD MISTAKENLY BE TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.
- ⑪ RECTANGULAR DETECTABLE WARNINGS MAY BE SETBACK UP TO 9" FROM THE BACK OF CURB WITH CORNERS SET 3" FROM BACK OF CURB. IF 9" SETBACK IS EXCEEDED USE RADIAL DETECTABLE WARNINGS.
- ⑫ FOR DIRECTIONAL RAMPS WITH THE DETECTABLE WARNINGS PLACED AT THE BACK OF CURB, THE DETECTABLE WARNINGS SHALL COVER THE ENTIRE WIDTH OF THE WALK/PATH. THIS ENSURES A DETECTABLE EDGE AND HELPS ELIMINATE THE CURB TAPER OBSTRUCTING THE PATH OF PEDESTRIAN TRAVEL.
- ⑬ THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE BACK OF CURB. MAINTAIN 3" BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.
- ⑭ TO BE USED FOR ALL DIRECTIONAL RAMPS, EXCEPT WHERE DOMES ARE PLACED ALONG THE BACK OF CURB.

LEGEND

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

⑤ INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.

⑥ INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.

LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PAR.

X" CURB HEIGHT

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.

SIGNATURE: *Duncan C. Schwensohn*

DUNCAN SCHWENSOHN
TYPE NAME

DATE: 6/13/2017

LIC. NO: 45486



CITY OF DULUTH
ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
DULUTH, MN 55802



REVISED:

APPROVED:

1-23-2017

PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250

2 OF 6

KENWOOD AVE MILL & OVERLAY

CITY PROJECT NO.: 1602

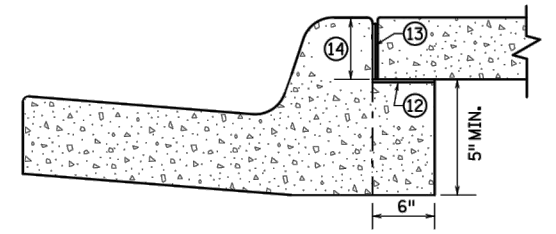
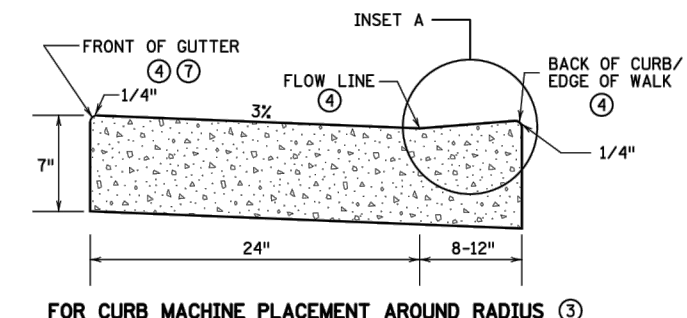
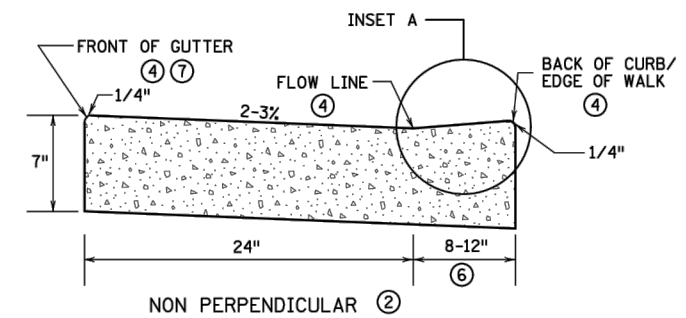
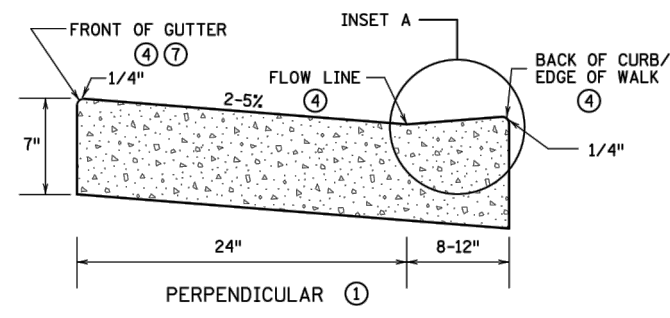
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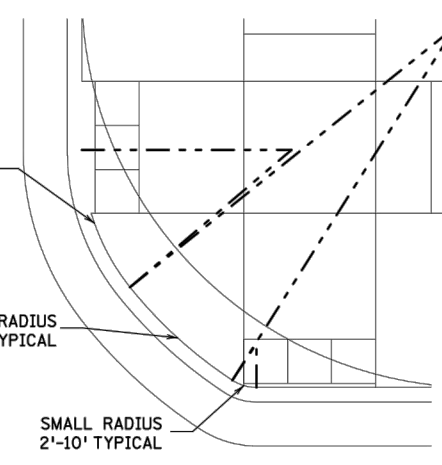
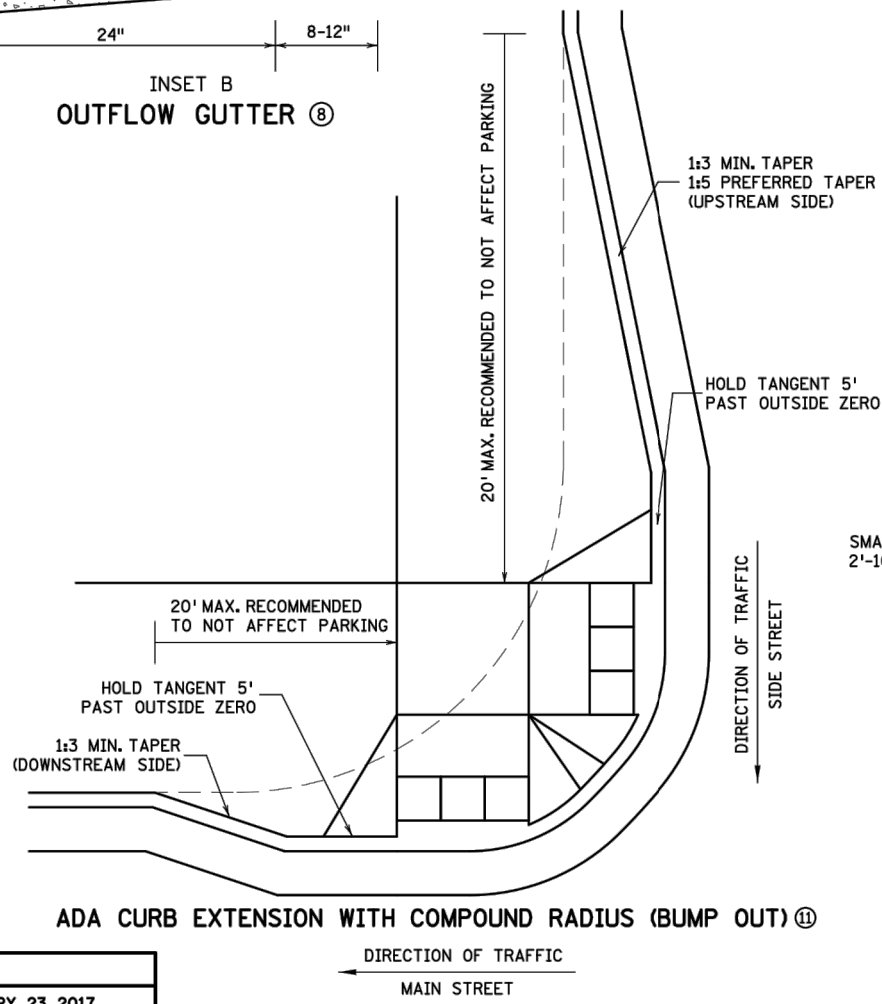
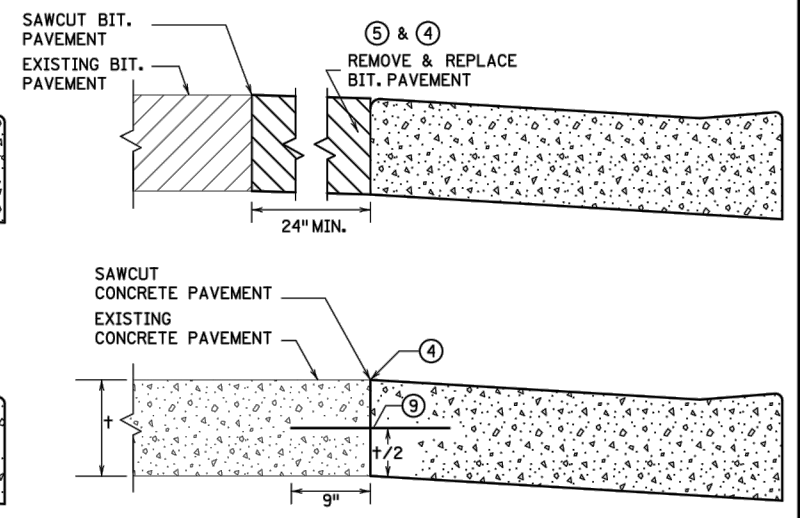
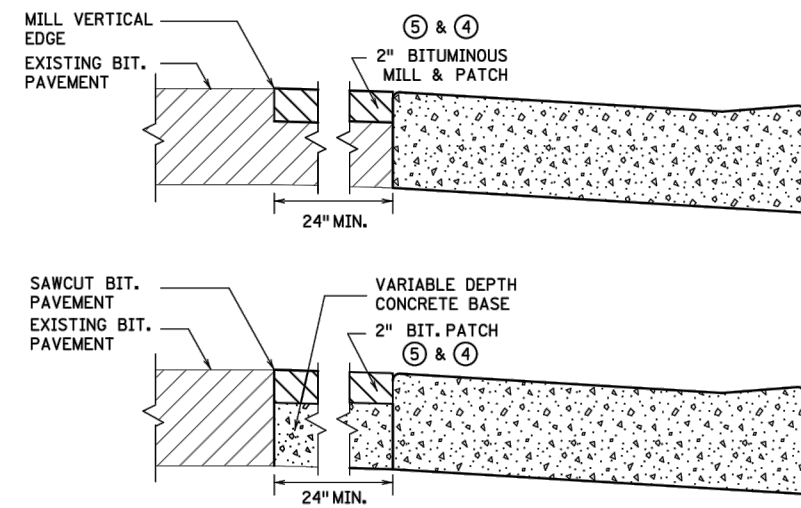
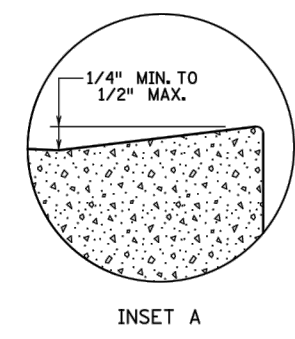
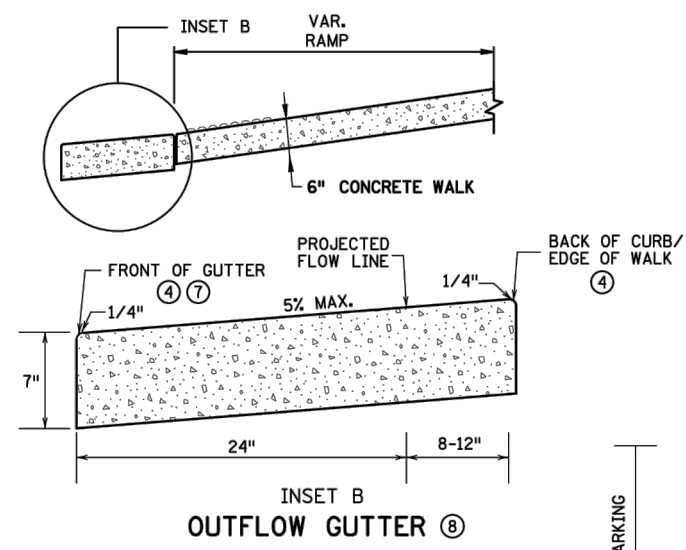
STD PLAN 2 OF 6

SHEET NO. 015 OF 35

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PEDESTRIAN ACCESS ROUTE CURB & GUTTER DETAIL



- 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.
 - 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 RAMP.
 - FOR USE AT CURB RAMP WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED NON PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: FANS & DEPRESSED CORNERS.
 - BEGIN GUTTER SLOPE TRANSITION 10' OUTSIDE OF ALL CURB RAMP.
 - THERE SHALL BE NO VERTICAL DISCONTINUITIES GREATER THAN 1/4".
 - 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.
 - VARIABLE WIDTH FOR DIRECTIONAL CURB APPLICATIONS. SEE SHEET 2 FOR DIRECTIONAL CURB SLOPE REQUIREMENTS.
 - 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.
 - SHOULD BE USED AT VERTICALLY CONSTRAINED AREAS WHEN AT A DRAINAGE HIGH POINT OR SUPER ELEVATED ROADWAY SEGMENTS.
 - 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.
 - HELPS PROVIDE TWO SEPARATE RAMP, REDUCES THE DOME SETBACK LENGTH AND MINIMIZES DIRECTIONAL CURB. THIS RADIUS DESIGN CLOSELY FOLLOWS THE TURNING VEHICLE PATH WHILE OPTIMIZING CURB RAMP LENGTH.
 - 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.
 - PLACE BOND BREAKER BETWEEN WALK AND TOP OF SILL.
 - 1/2" PREFORMED JOINT FILLER PER MNDOT SPEC. 3702.
 - DIMENSION TO BE SAME AS SIDEWALK THICKNESS, 4" MIN.

REVISION:
APPROVED: JANUARY 23, 2017
OPERATIONS ENGINEER

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

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

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

SIGNATURE: *Duncan C. Schwensohn*
DUNCAN SCHWENSOHN
TYPE NAME

DATE: 6/13/2017
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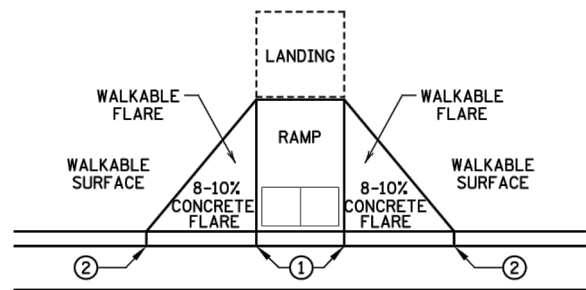


CITY OF DULUTH
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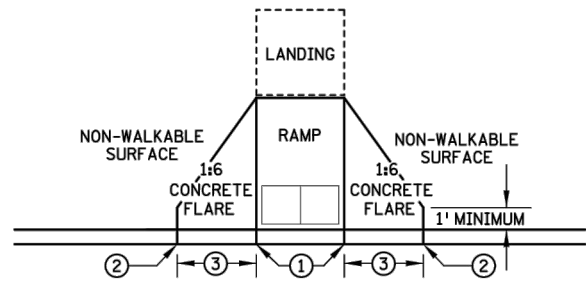
KENWOOD AVE MILL & OVERLAY
CITY PROJECT NO.: 1602
STATE AID PROJECT NO.: 118-151-013

DRAWN BY: DJK/SCA/BRC
STD PLAN 3 OF 6
SHEET NO. 016 OF 35

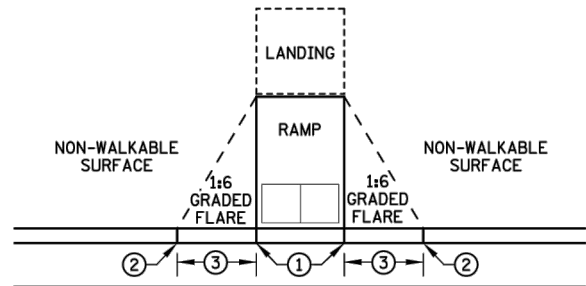
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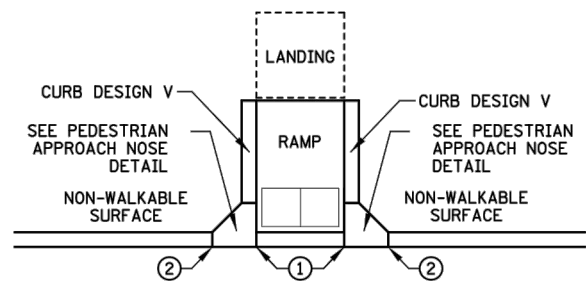
PAVED FLARES
ADJACENT TO WALKABLE SURFACE



PAVED FLARES
ADJACENT TO NON-WALKABLE SURFACE

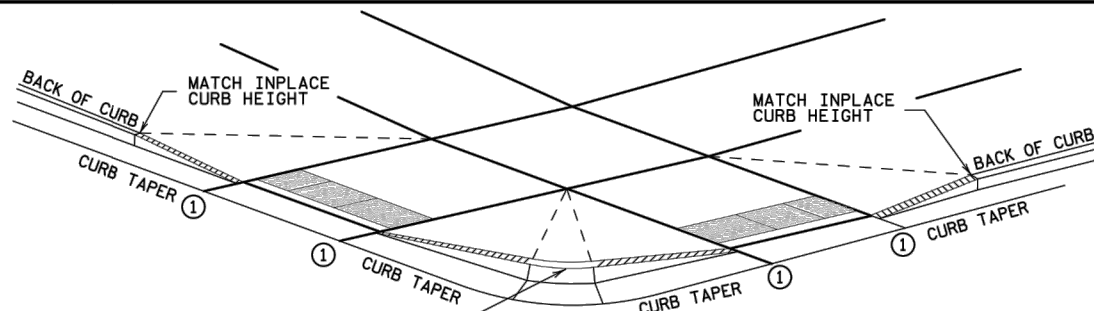


GRADED FLARES



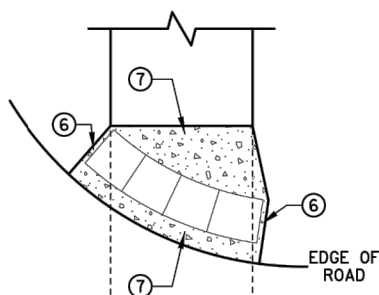
RETURNED CURB ⑤

TYPICAL SIDE TREATMENT OPTIONS ④ ⑪

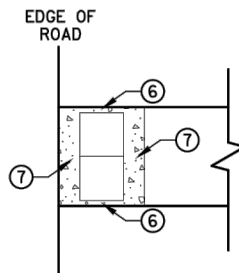


3" MINIMUM CURB HEIGHT, 4" PREFERRED
(MEASURED AT FRONT FACE OF CURB)
FOR A MIN. 6" LENGTH (MEASURED ALONG FLOW LINE)

DETECTABLE EDGE WITH ⑧
CURB AND GUTTER

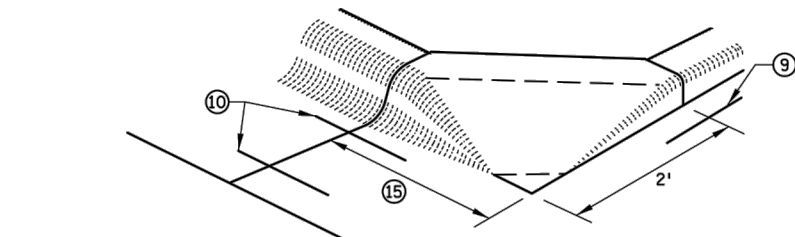


RADIAL DETECTABLE WARNING

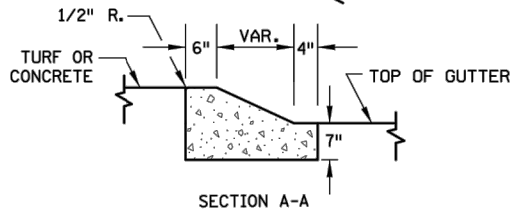


RECTANGULAR DETECTABLE WARNING

DETECTABLE EDGE WITHOUT CURB AND GUTTER

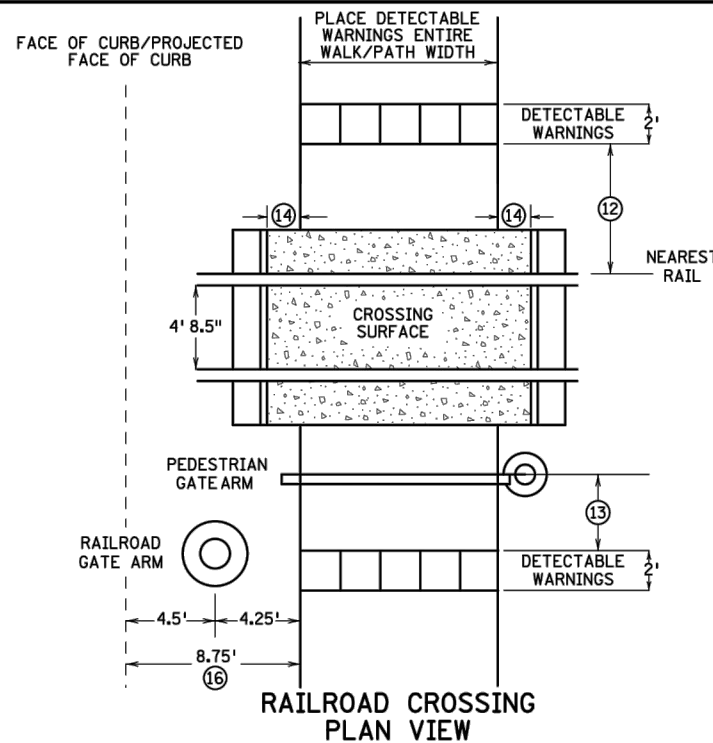
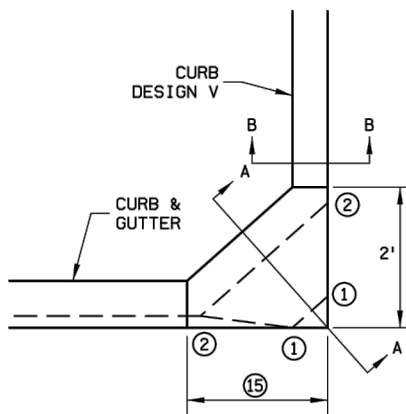


SECTION A-A



SECTION B-B

PEDESTRIAN APPROACH
NOSE DETAIL
(FOR RETURNED CURB
SIDE TREATMENT)



RAILROAD CROSSING
PLAN VIEW

NOTES:

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

REVISION:

APPROVED: JANUARY 23, 2017

OPERATIONS ENGINEER

DATE: 6/13/2017

LIC. NO: 45486



CITY OF DULUTH
ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
DULUTH, MN 55802



STATE DESIGN ENGINEER

REVISED:

APPROVED:

1-23-2017

PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250

4 OF 6

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

SIGNATURE: Duncan C. Schwensohn

DUNCAN SCHWENSOHN
TYPE NAME

KENWOOD AVE MILL & OVERLAY

CITY PROJECT NO.: 1602

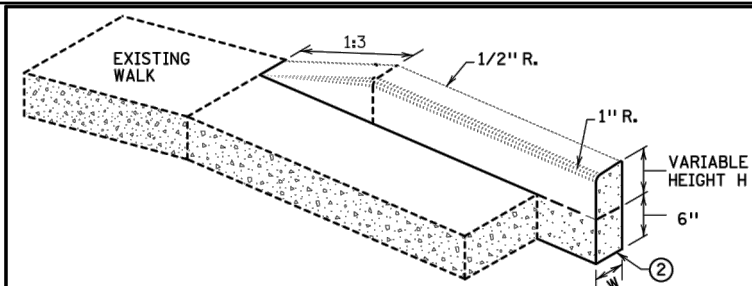
STATE AID PROJECT NO.: 118-151-013

DRAWN BY: DJK/SCA/BRC

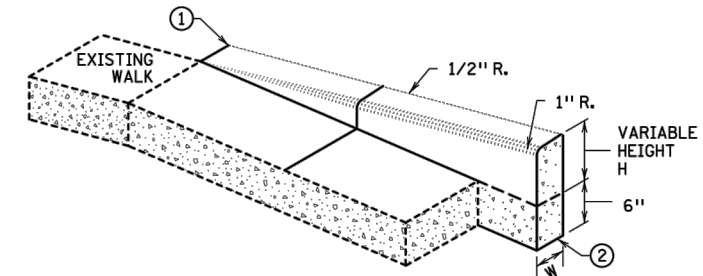
STD PLAN 4 OF 6

SHEET NO. 017 OF 35

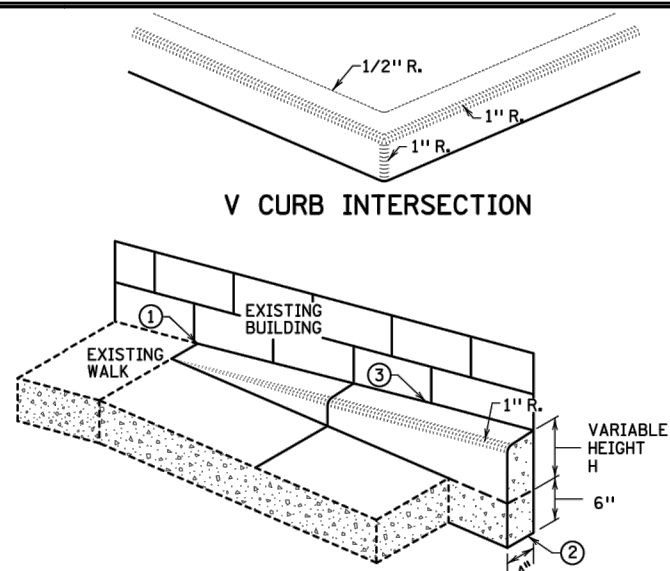
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V CURB ADJACENT TO LANDSCAPE
CURB WITHIN SIDEWALK LIMITS

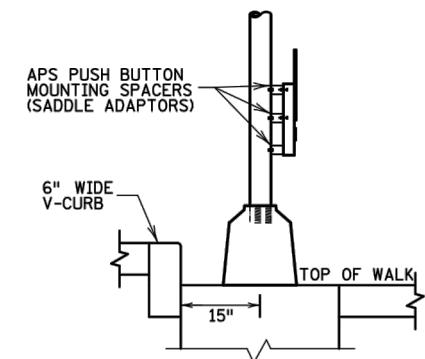
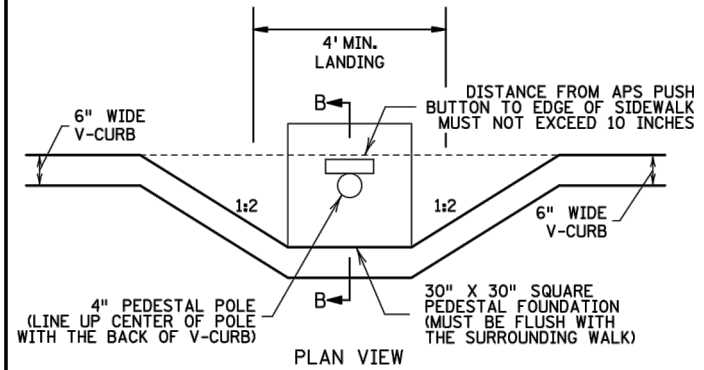


V CURB ADJACENT TO LANDSCAPE
CURB OUTSIDE SIDEWALK LIMITS

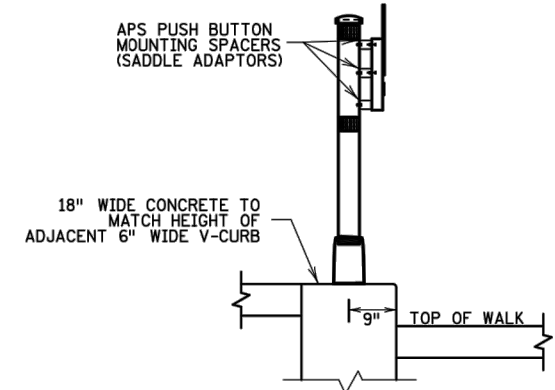
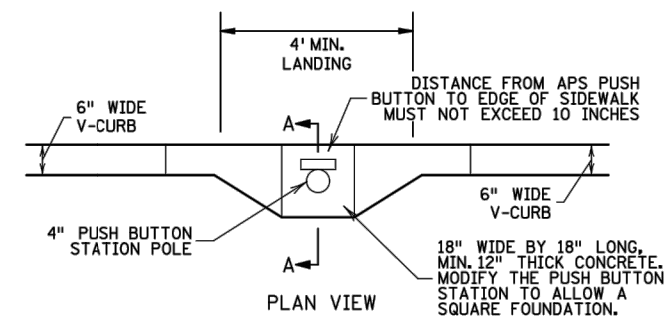


V CURB ADJACENT TO BUILDING
OR BARRIER

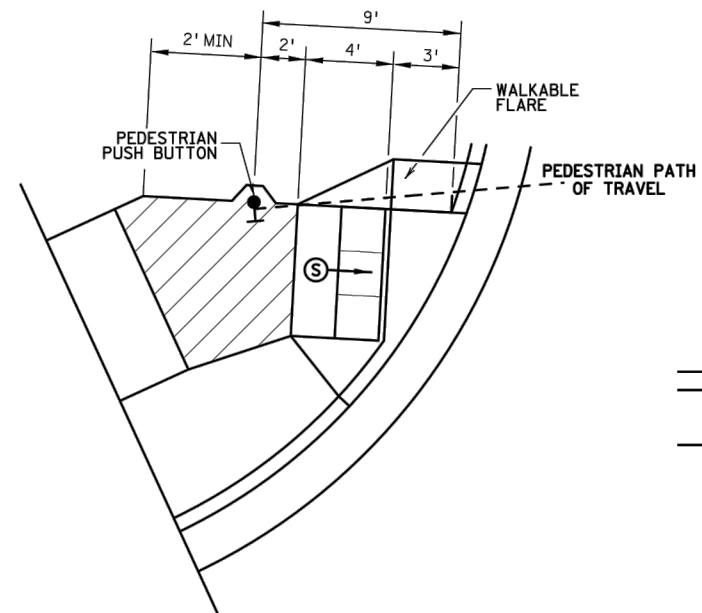
CONCRETE CURB DESIGN V	
CURB HEIGHT H	CURB WIDTH W
< 6"	4"
≥ 6"	6"



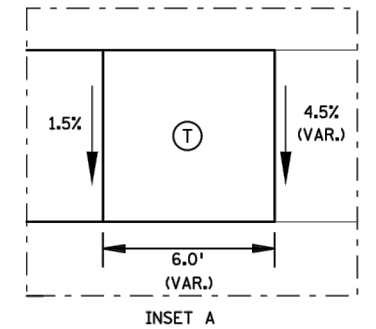
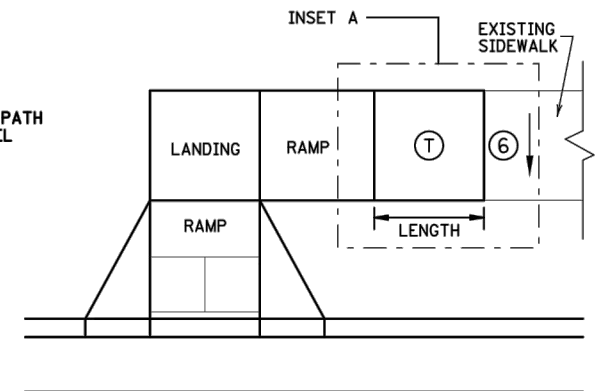
SECTION B-B
SIGNAL PEDESTAL & PUSH BUTTON (V-CURB)



SECTION A-A
PUSH BUTTON STATION (V-CURB)



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



TRANSITION PANEL (4,5)

NOTES:

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

LEGEND

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

REVISION:
APPROVED: JANUARY 23, 2017
OPERATIONS ENGINEER



REVISION:

APPROVED:

1-23-2017

STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250

5 OF 6

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

SIGNATURE: Duncan C. Schwensohn DUNCAN SCHWENSOHN TYPE NAME

DATE: 6/13/2017
LIC. NO.: 45486

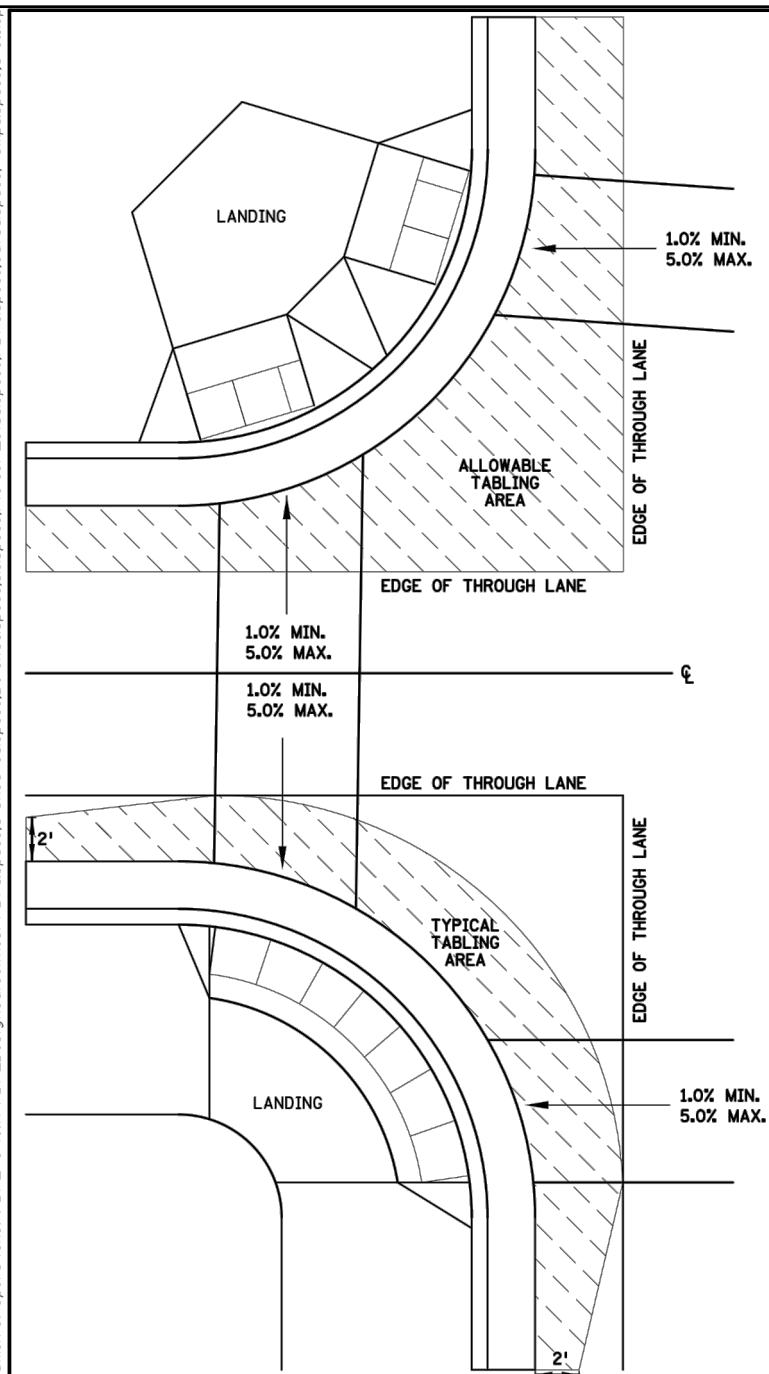


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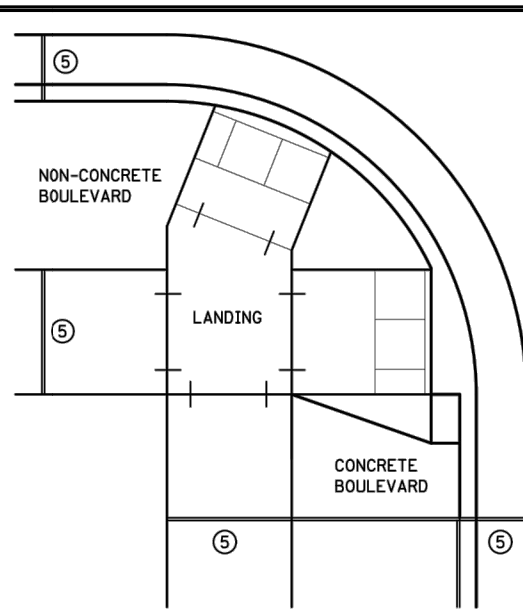
KENWOOD AVE MILL & OVERLAY
CITY PROJECT NO.: 1602
STATE AID PROJECT NO.: 118-151-013

DRAWN BY: DJK/SCA/BRC
STD PLAN 5 OF 6
SHEET NO. 018 OF 35

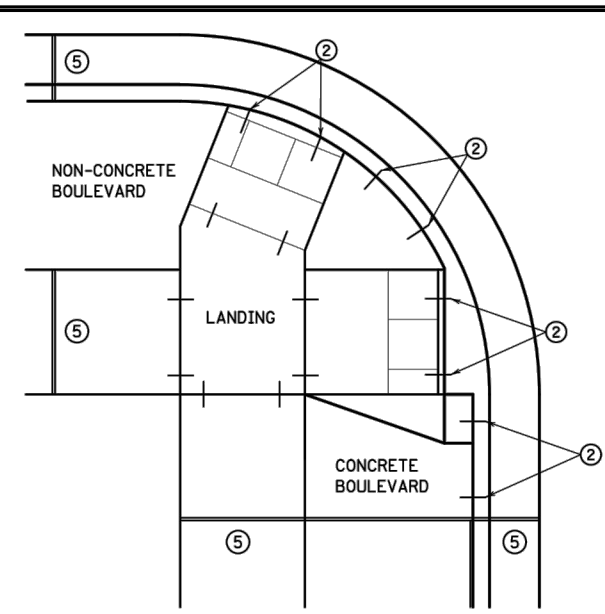
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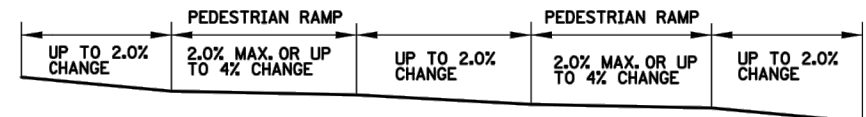
CURB LINE AND ROAD CROSSING ADJUSTMENTS



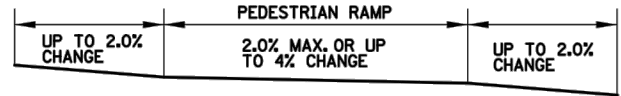
EXPANSION MATERIAL PLACEMENT FOR CONCRETE AND BITUMINOUS ROADWAYS



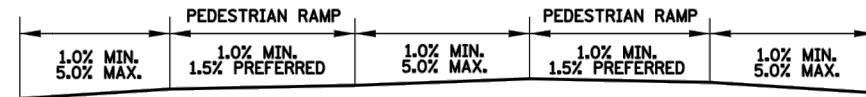
OPTIONAL CURB LINE REINFORCEMENT PLACEMENT ON BITUMINOUS ROADWAYS ④



FLOW LINE PROFILE "TABLE" - TWIN PERPENDICULARS



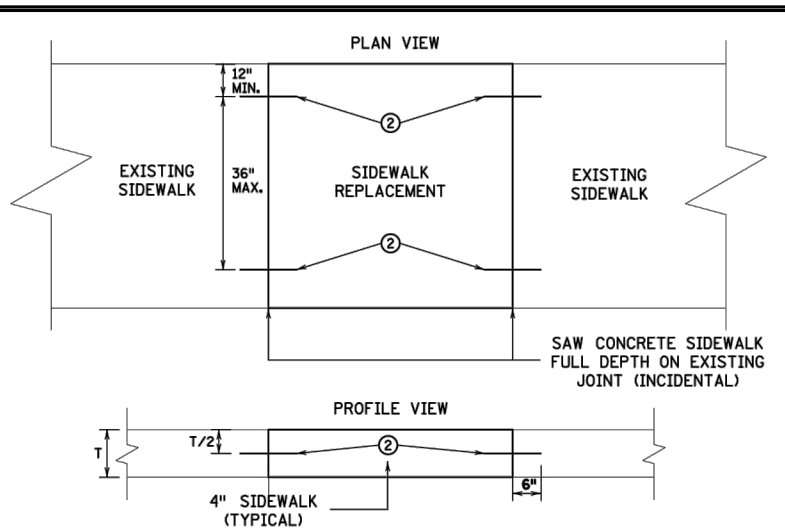
FLOW LINE PROFILE "TABLE" - FAN



FLOW LINE PROFILE RAISE - TWIN PERPENDICULARS

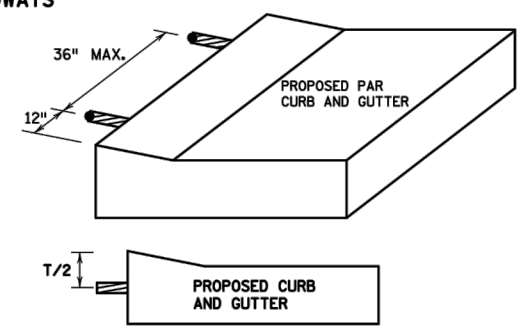


FLOW LINE PROFILE RAISE - FAN

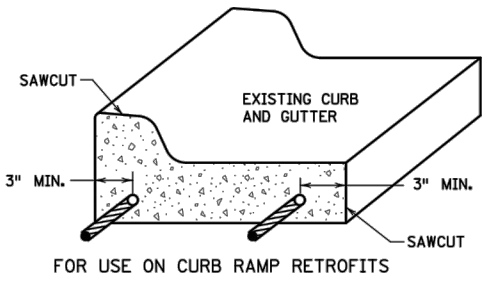


OPTIONAL SIDEWALK REINFORCEMENT

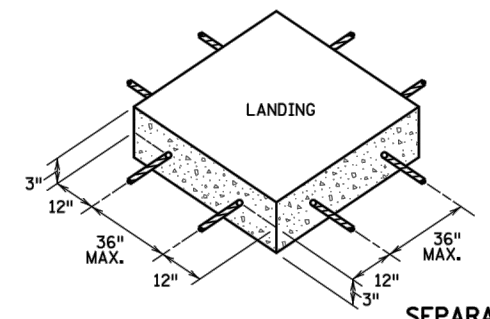
SIDEWALK REINFORCEMENT TO BE USED ONLY WHEN SPECIFIED IN THE PLAN.



OPTIONAL CURB LINE REINFORCEMENT DETAILS ②④



CURB AND GUTTER REINFORCEMENT ③



SEPARATE LANDING POUR REINFORCEMENT ①

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

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

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

- 1) 1.0% MIN. CROSS-SLOPE OF THE ROAD
- 2) 5.0% MAX. CROSS-SLOPE OF THE ROAD
- 3) 1.0% MIN. FLOW LINE (ON EITHER SIDE OF PEDESTRIAN RAMP) TO MAINTAIN POSITIVE DRAINAGE
- 4) UP TO 2% CHANGE IN FLOW LINE FROM EXISTING SLOPE BEYOND THE PEDESTRIAN CURB RAMP

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

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

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

NOTES:

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

REVISION:
APPROVED: JANUARY 23, 2017
OPERATIONS ENGINEER

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

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

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

SIGNATURE: *Duncan C. Schwensohn*

DUNCAN SCHWENSOHN
TYPE NAME

DATE: 6/13/2017
LIC. NO.: 45486

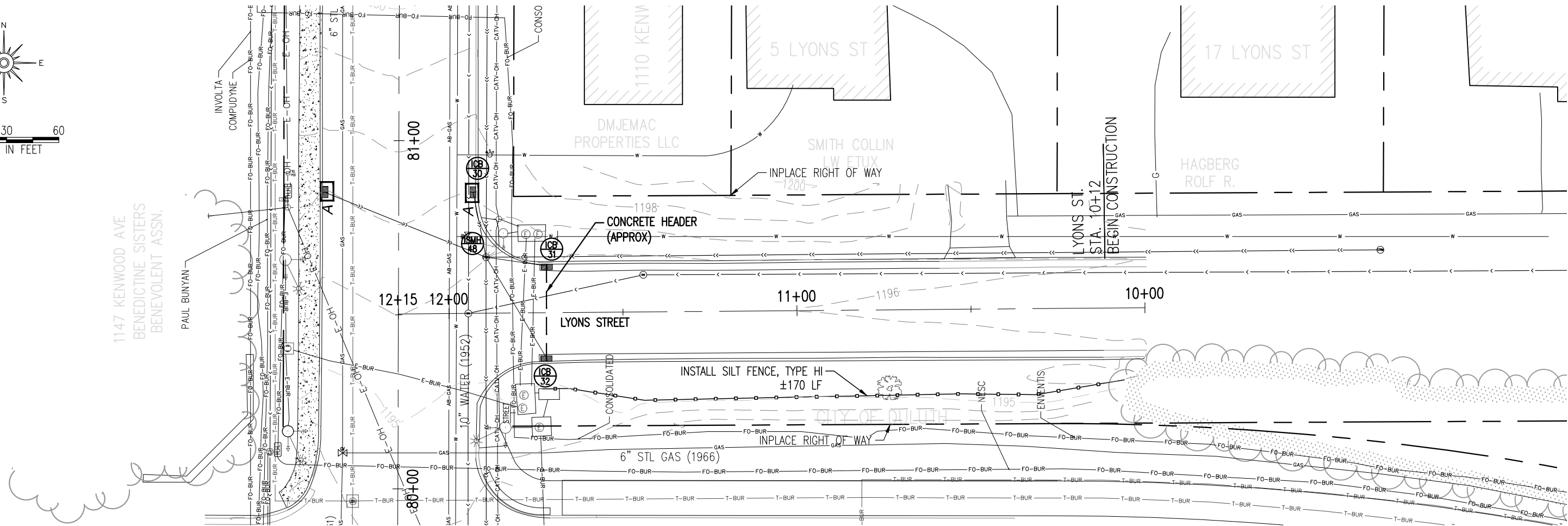
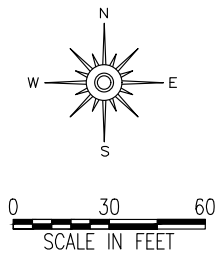


CITY OF DULUTH
ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
DULUTH, MN 55802

KENWOOD AVE MILL & OVERLAY
CITY PROJECT NO.: 1602
STATE AID PROJECT NO.: 118-151-013

DRAWN BY: DJK/SCA/BRC
STD PLAN 6 OF 6
SHEET NO. 019 OF 35

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STORMWATER BMP LEGEND

- STORM DRAIN INLET PROTECTION
- SILT FENCE TYPE HI

SPECIAL NOTE:

LYONS STREET WILL BE REALIGNED DURING THIS PROJECT.
THIS PLAN CONTAINS TWO (2) ALIGNMENTS FOR LYONS STREET.
THE INPLACE ALIGNMENT SHALL BE USED FOR REMOVALS ONLY.

ALL PROPOSED CONSTRUCTION IN THIS PLAN REFERENCES THE
CONSTRUCTION ALIGNMENT (LYONS CONSTRUCTION)

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.

SIGNATURE:

DUNCAN SCHWENSOHN
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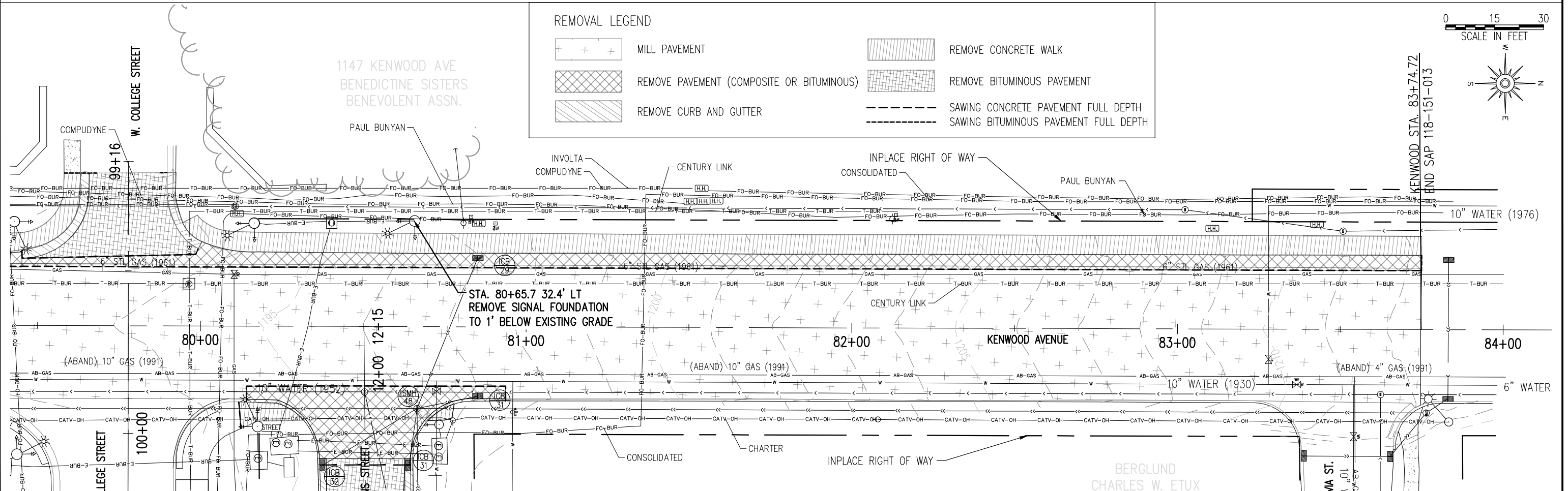
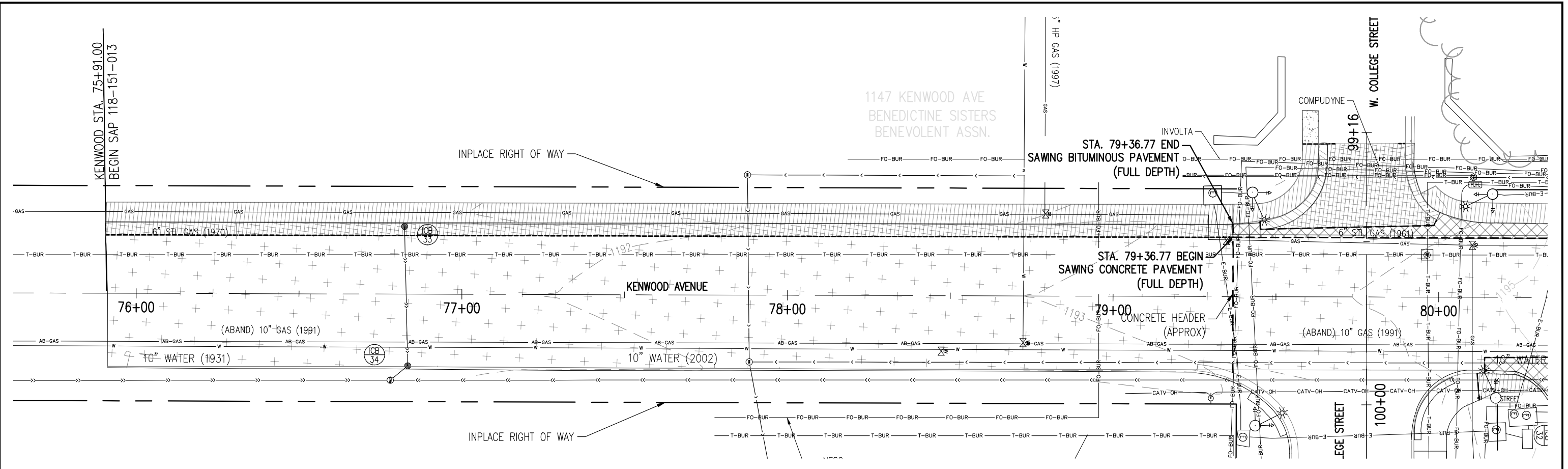
CITY OF DULUTH
ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
DULUTH, MN 55802

KENWOOD AVE MILL & OVERLAY

CITY PROJECT NO.: 1602
STATE AID PROJECT NO.: 118-151-013

DRAWN BY: DJK/SCA/BRC
EXISTING CONDITIONS - EROSION CONTROL
SHEET NO. 021 OF 35

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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.

SIGNATURE: *Duncan C. Schwensohn*

DUNCAN SCHWENSOHN
TYPE NAME

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411 W. 1ST ST. STE. 211
DULUTH, MN 55802

KENWOOD AVE MILL & OVERLAY

CITY PROJECT NO.: 1602

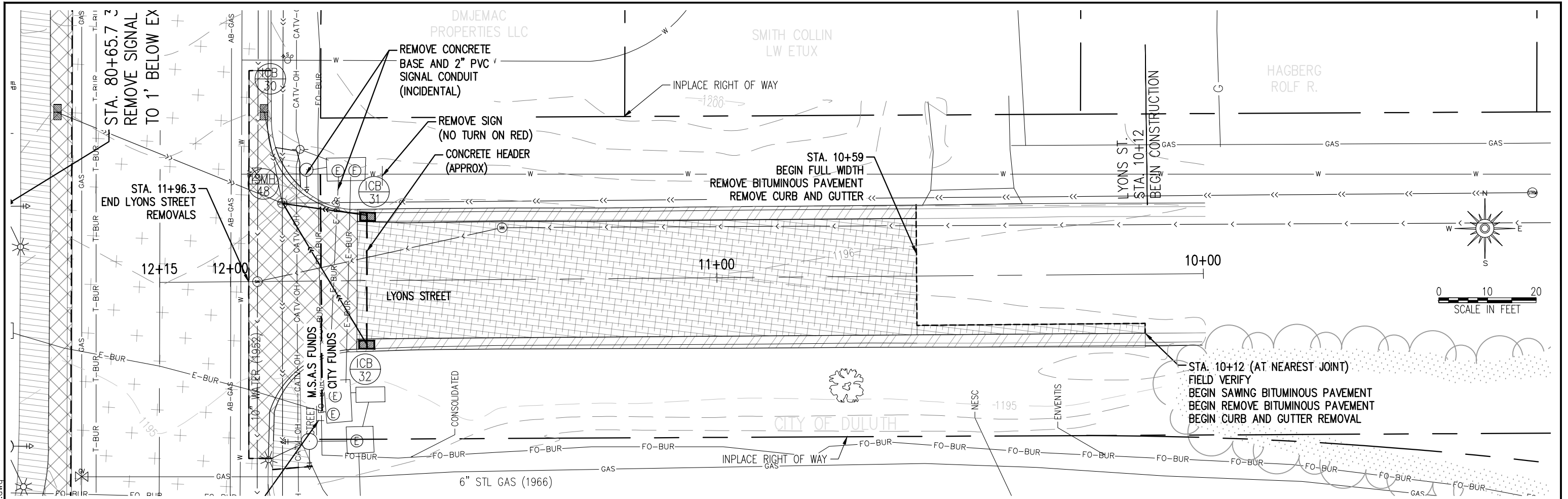
STATE AID PROJECT NO.: 118-151-013

DRAWN BY: DJK/SCA/BRC

REMOVAL PLAN

SHEET NO. 022 OF 35

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REMOVAL LEGEND

- | | | | |
|--|---|--|---------------------------------------|
| | MILL PAVEMENT | | REMOVE CONCRETE WALK |
| | REMOVE PAVEMENT (COMPOSITE OR BITUMINOUS) | | SAWING CONCRETE PAVEMENT FULL DEPTH |
| | REMOVE BITUMINOUS PAVEMENT | | SAWING BITUMINOUS PAVEMENT FULL DEPTH |
| | REMOVE CURB AND GUTTER | | REMOVE SEWER PIPE (STORM) |
| | | | REMOVE MANHOLE OR CATCH BASIN |

SPECIAL NOTE:

LYONS STREET WILL BE REALIGNED DURING THIS PROJECT. THIS PLAN CONTAINS TWO (2) ALIGNMENTS FOR LYONS STREET. THE INPLACE ALIGNMENT SHALL BE USED FOR REMOVALS ONLY.

ALL PROPOSED CONSTRUCTION IN THIS PLAN REFERENCES THE CONSTRUCTION ALIGNMENT (LYONS CONSTRUCTION)

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.

SIGNATURE:

DUNCAN SCHWENSOHN
TYPE NAME

DATE: 6/13/2017

LIC. NO: 45486



CITY OF DULUTH
ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
DULUTH, MN 55802

KENWOOD AVE MILL & OVERLAY

CITY PROJECT NO.: 1602

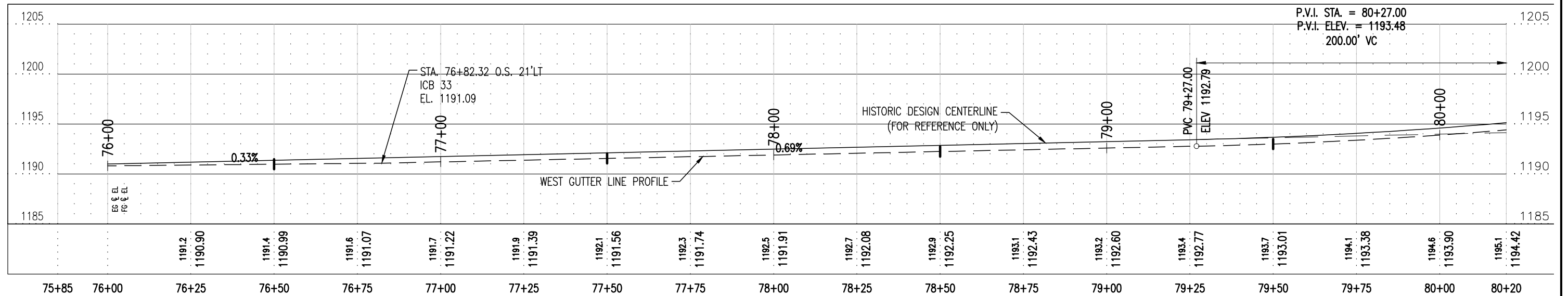
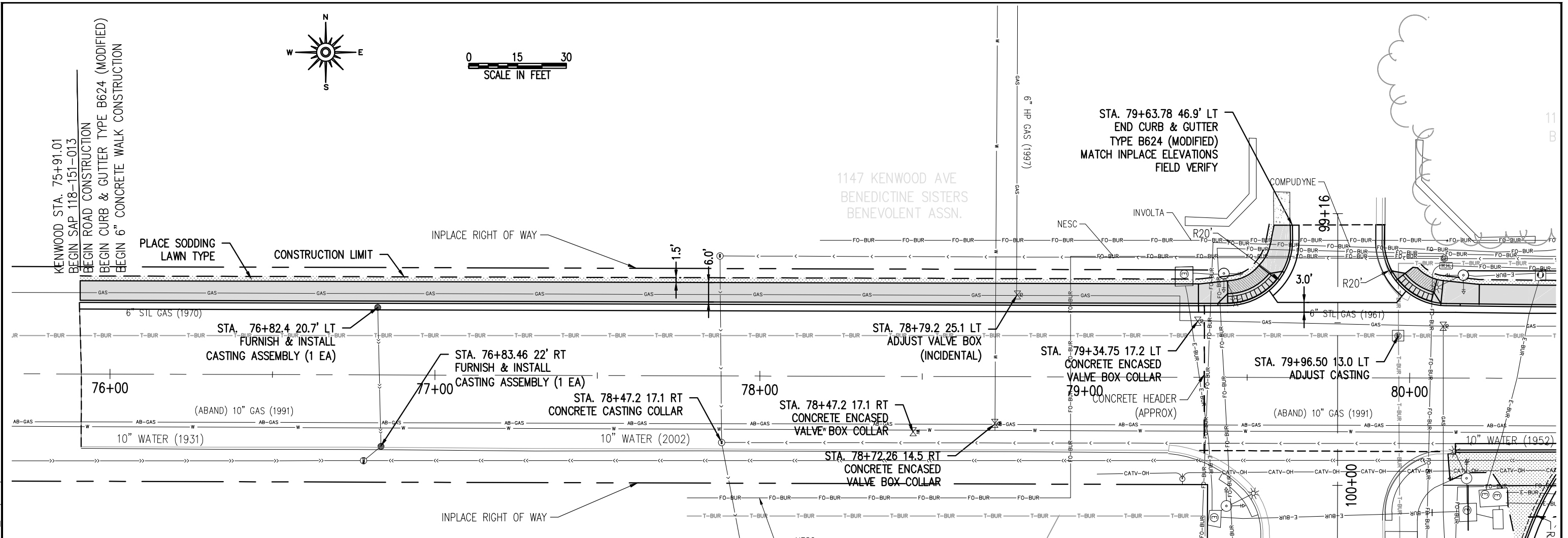
STATE AID PROJECT NO.: 118-151-013

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REMOVAL PLAN

SHEET NO. 023 OF 35

i:\PW\ENGINEER\PROJECTS\1500-1999\1602_kenwood_&_college_mill_&_overlay\23-acad-drawings\1602_Prop.dwg



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SIGNATURE: *Duncan C. Schwensohn*

DUNCAN SCHWENSOHN
TYPE NAME

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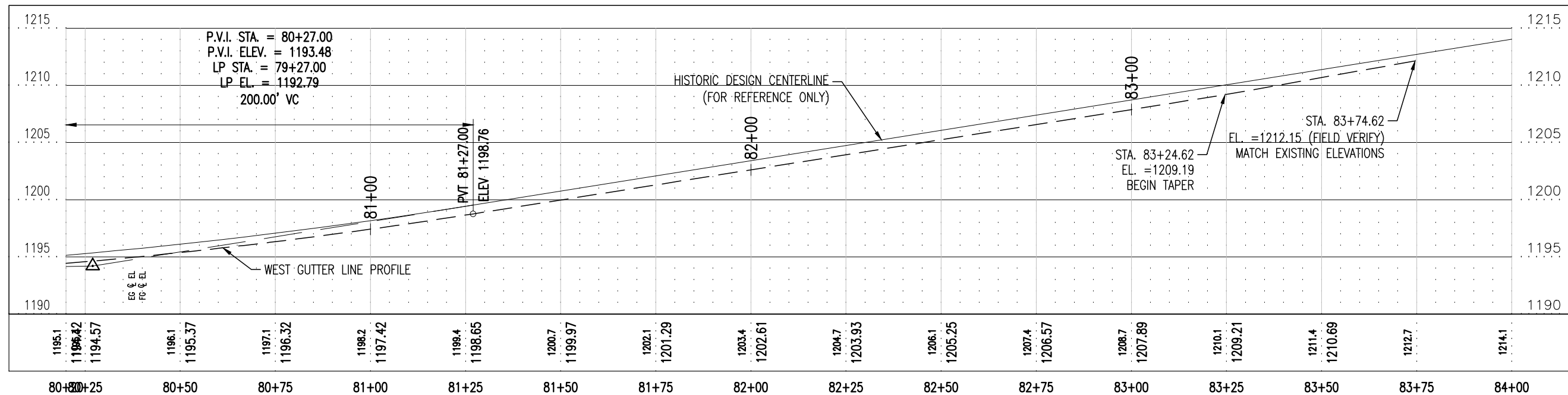
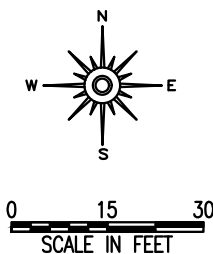
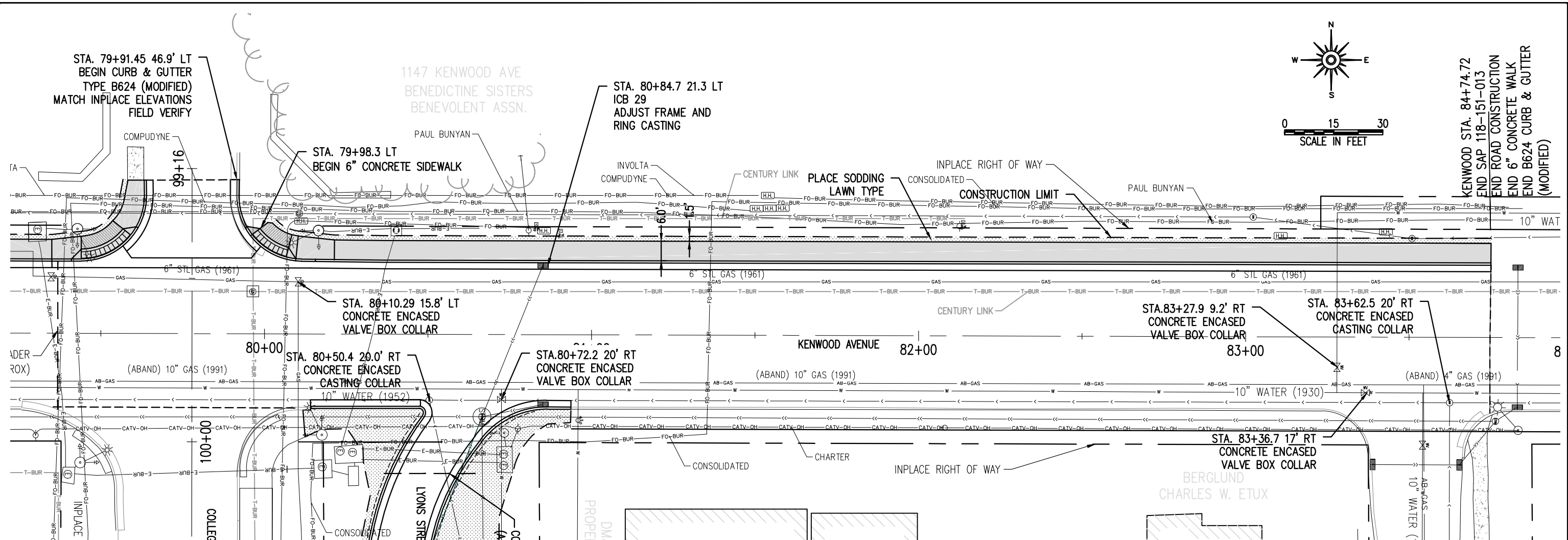
STATE AID PROJECT NO.: 118-151-013

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KENWOOD PLAN PROFILE

SHEET NO. 024 OF 35

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SIGNATURE: *Duncan C. Schwensohn*

DUNCAN SCHWENSOHN
TYPE NAME

DATE: 6/13/2017

LIC. NO.: 45486



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KENWOOD AVE MILL & OVERLAY

CITY PROJECT NO.: 1602

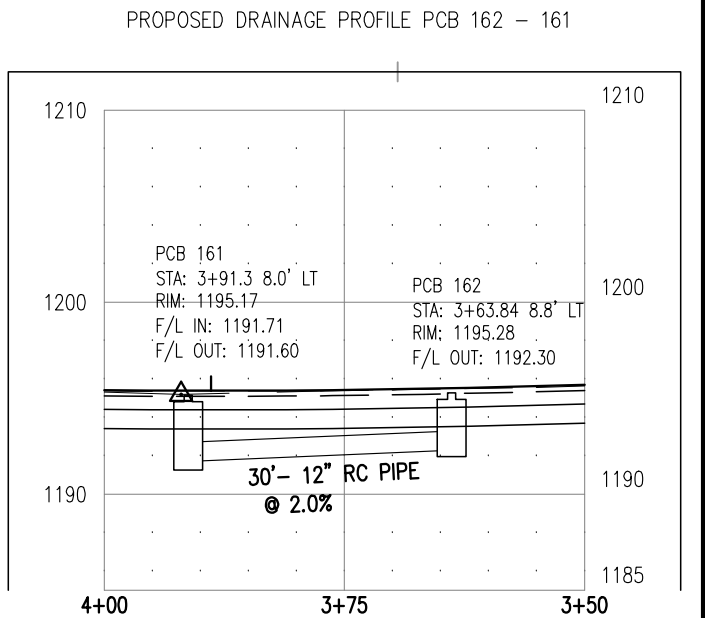
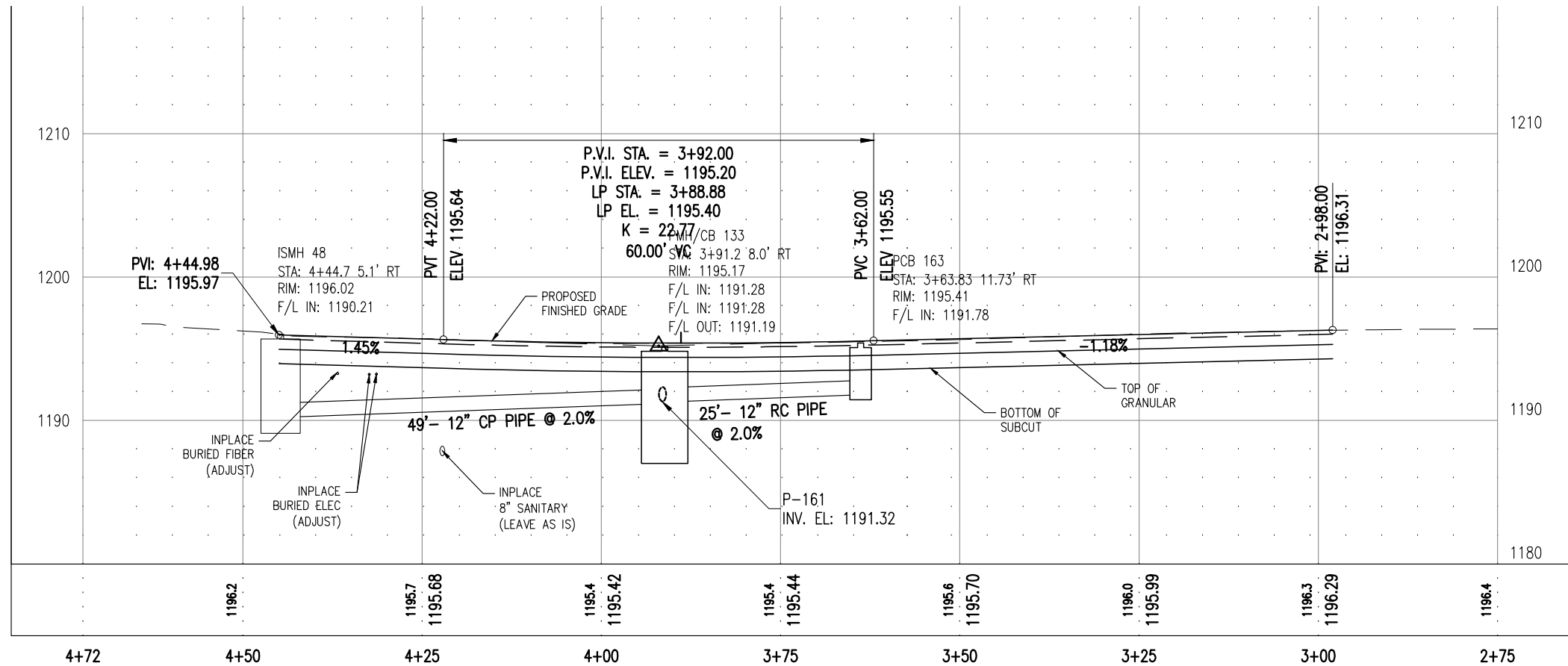
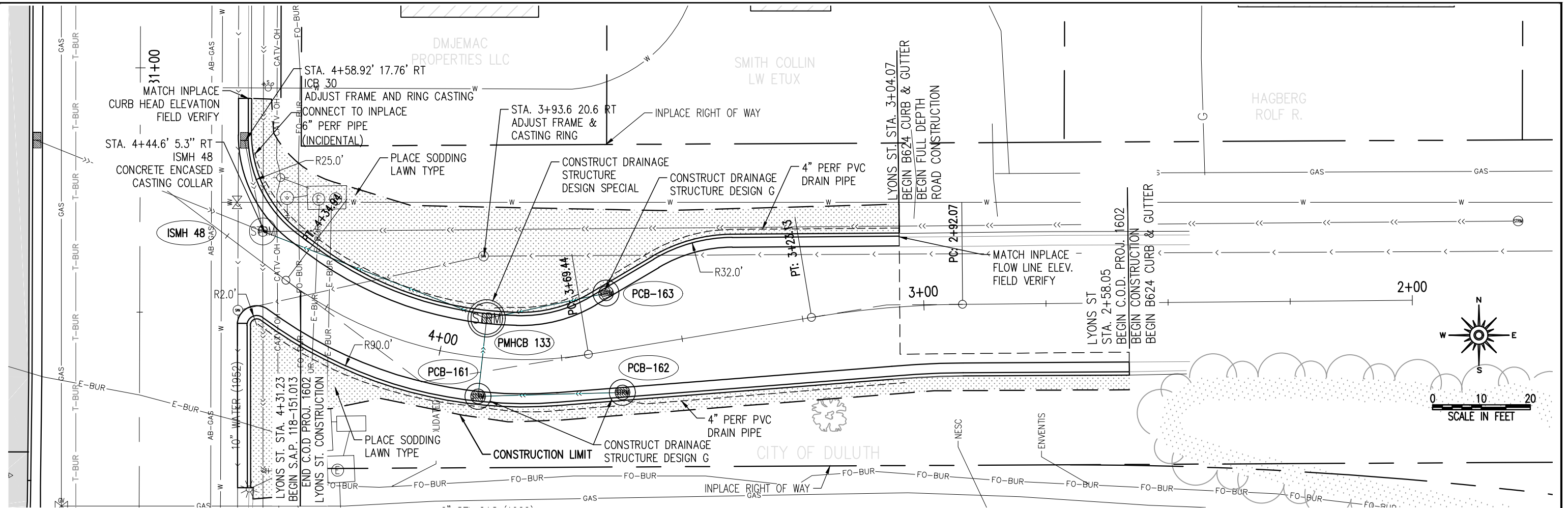
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KENWOOD PLAN - PROFILE

SHEET NO. 025 OF 35

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DULUTH, MN 55802

KENWOOD AVE MILL & OVERLAY

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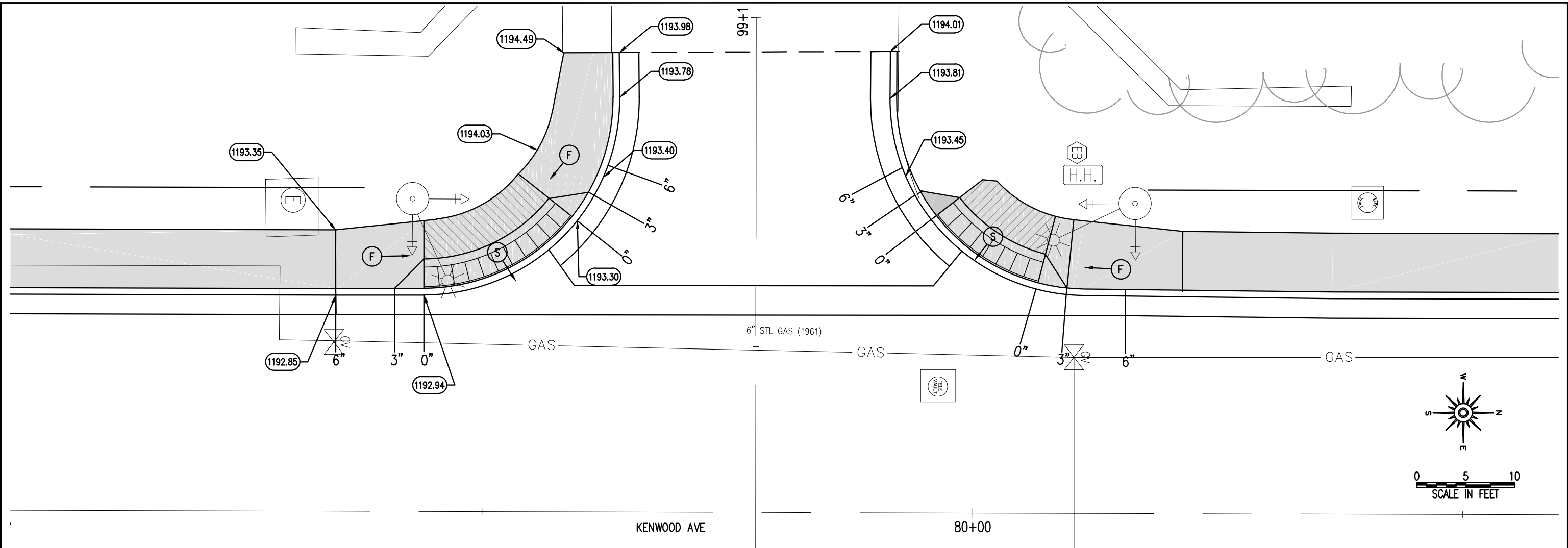
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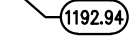
LYONS ST PLAN PROFILE

SHEET NO. 026 OF 35

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LEGEND

-  PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%
-  PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 5.0% AND LESS THAN 8.33 % IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%
-  SPOT ELEVATION
-  CURB HEIGHT
-  LANDING AREA - SHALL NOT EXCEED 2.0% SLOPE IN ALL DIRECTIONS
-  RAISED DOMES

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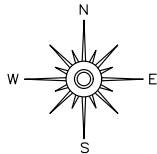
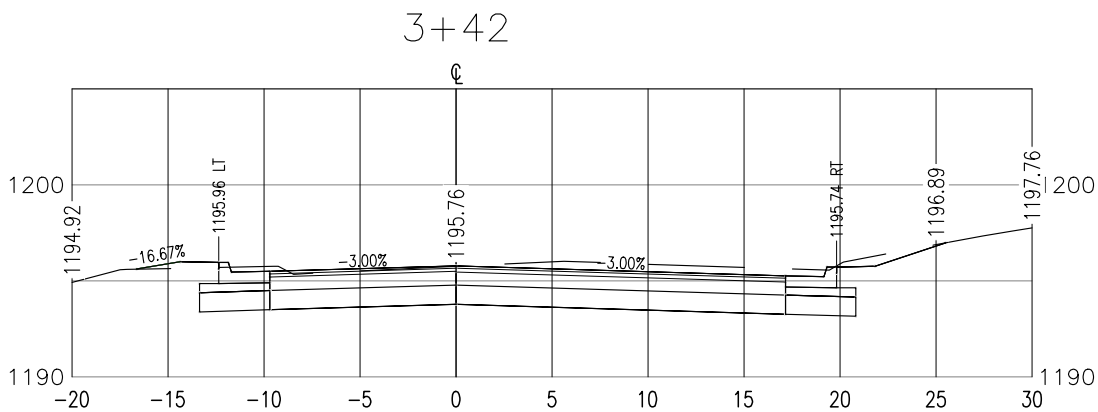
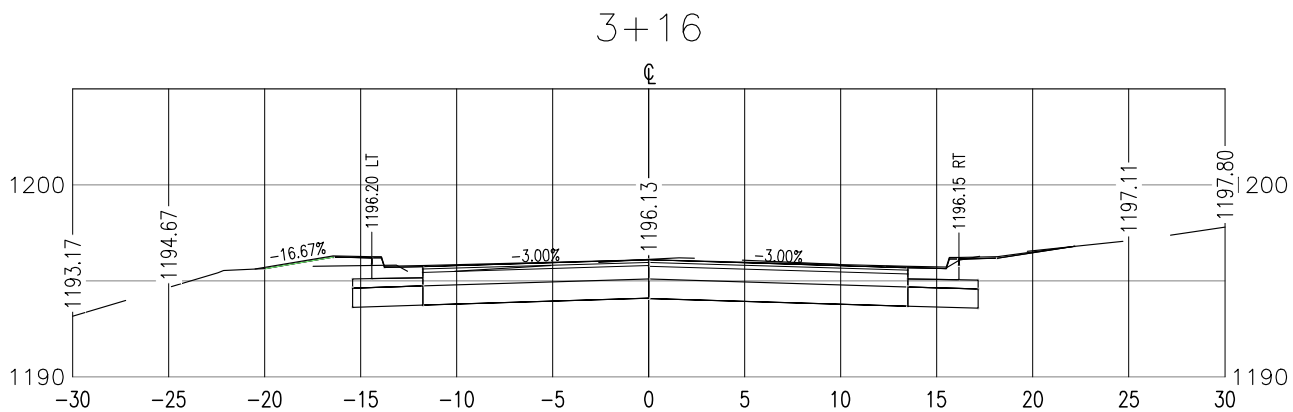
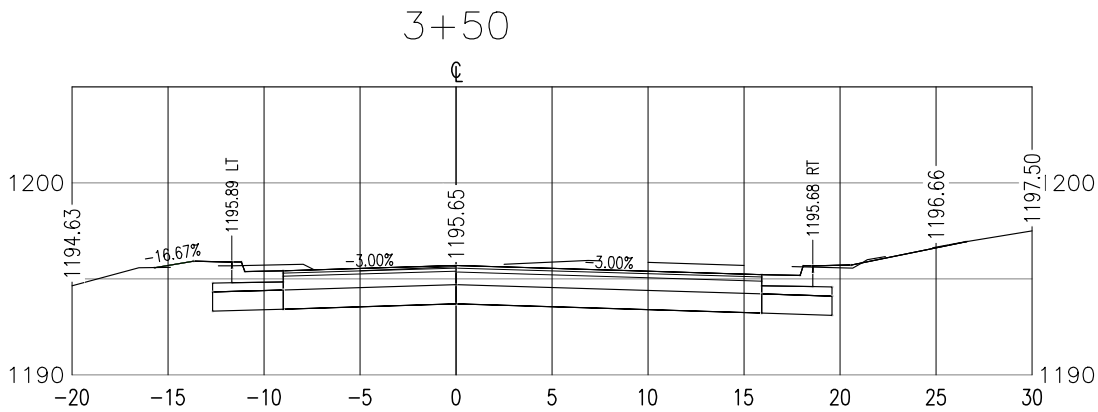
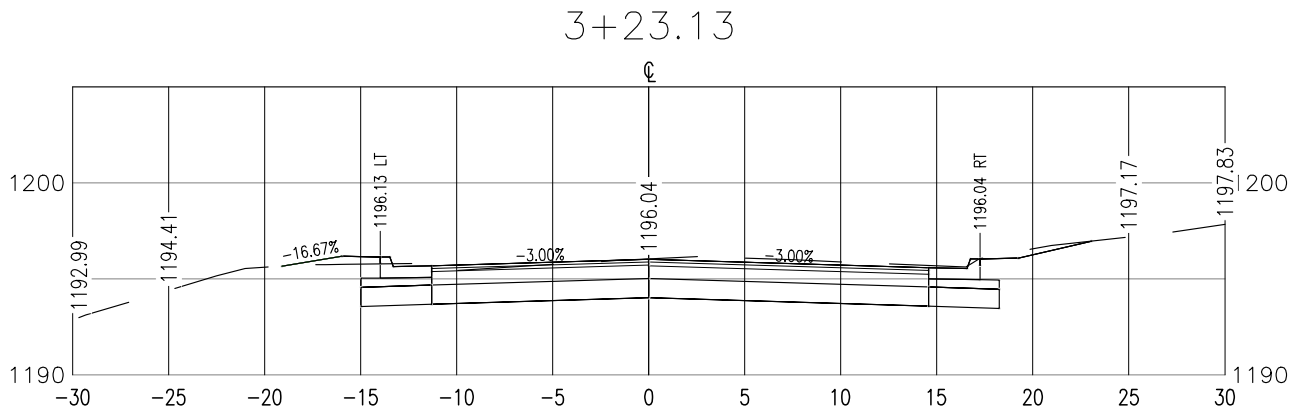
STATE AID PROJECT NO.: 118-151-013

DRAWN BY: DJK/SCA/BRC

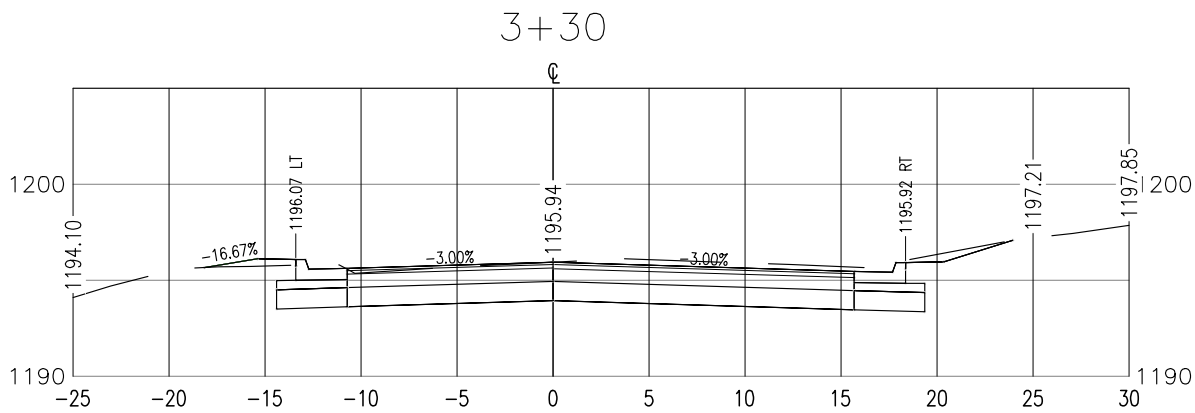
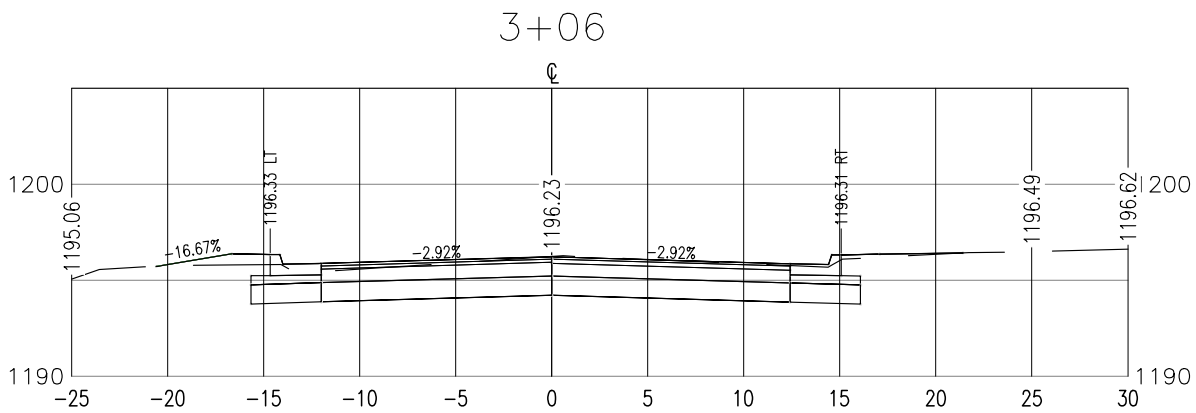
ADA LAYOUT

SHEET NO. 027 OF 35

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0 20 40
SCALE IN FEET



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ENGINEERING DIVISION
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DULUTH, MN 55802

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CITY PROJECT NO.: 1602

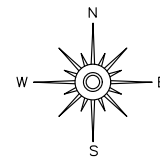
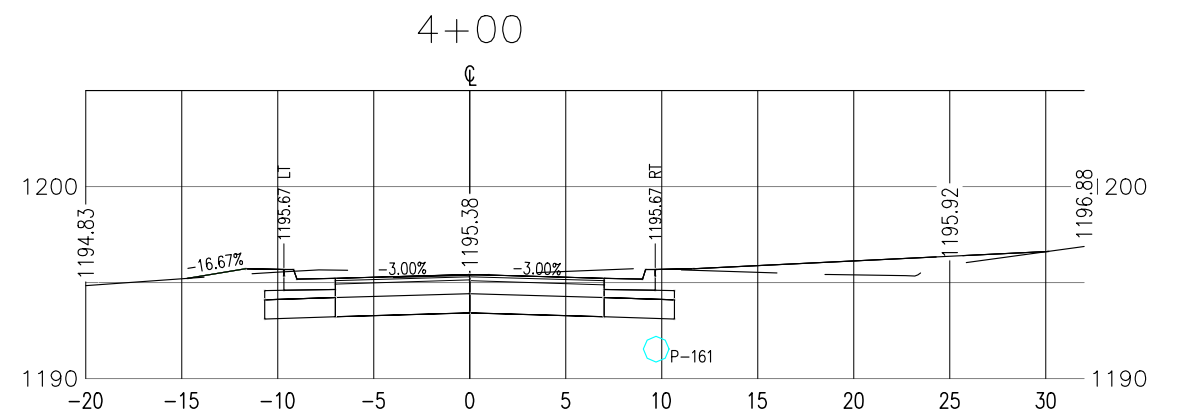
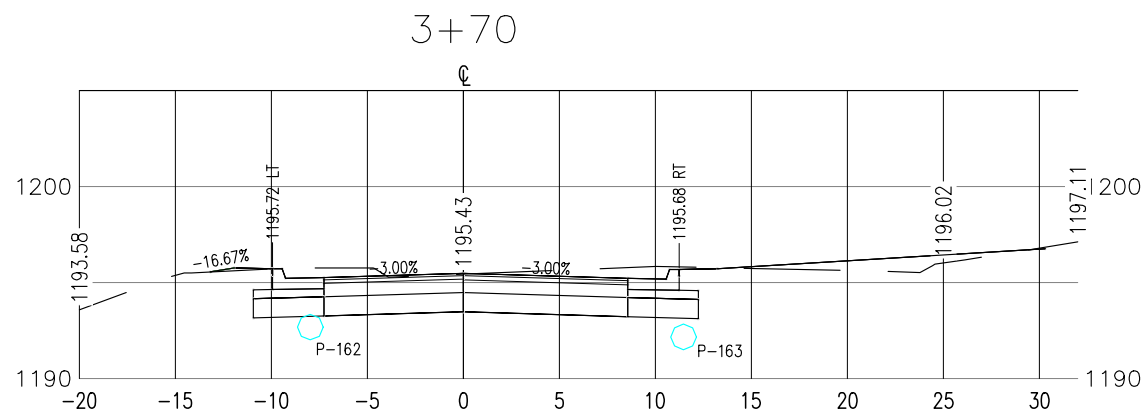
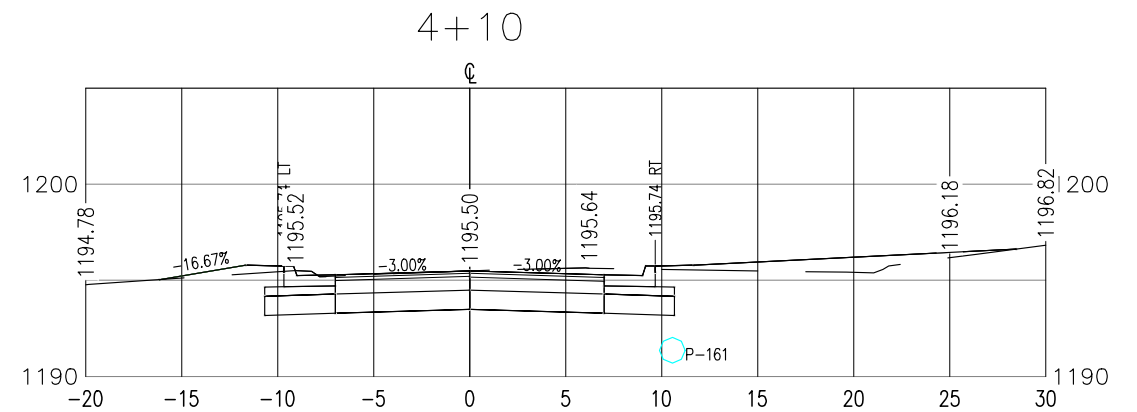
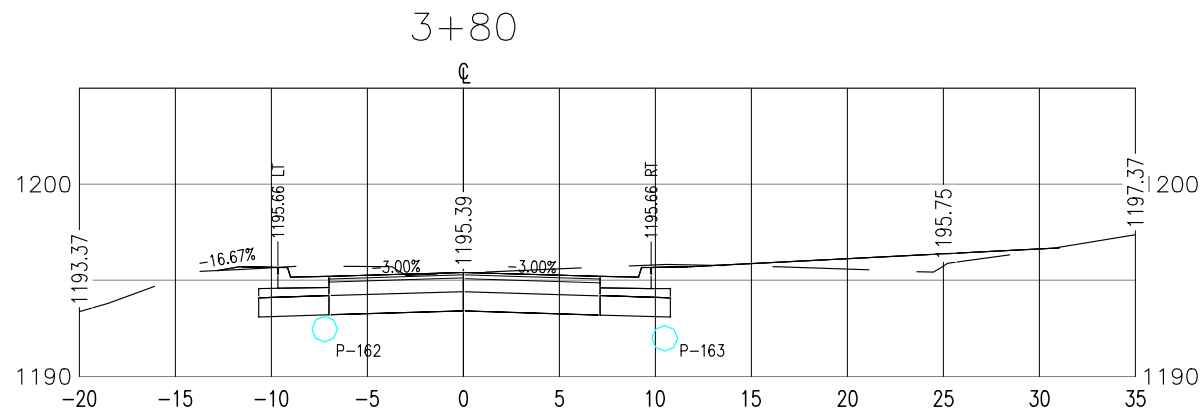
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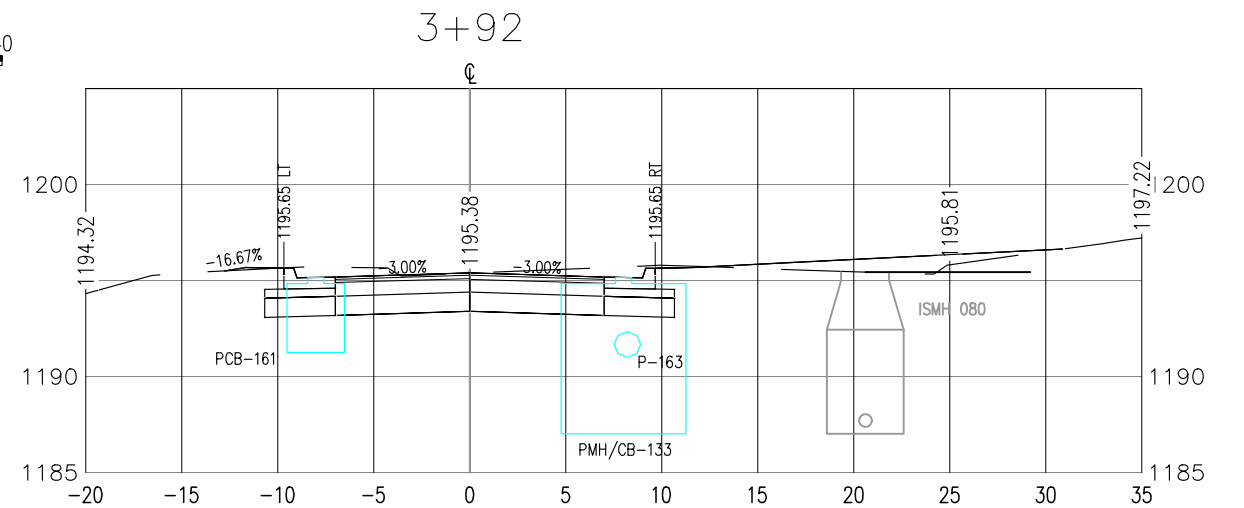
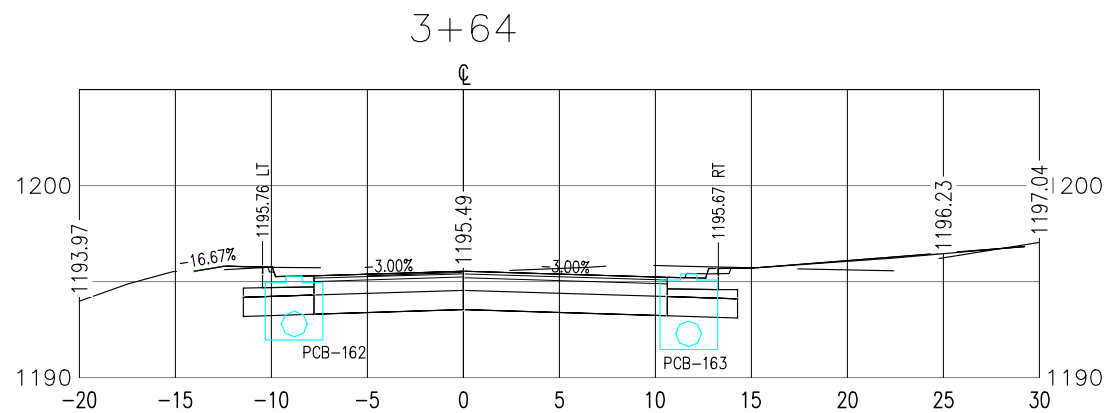
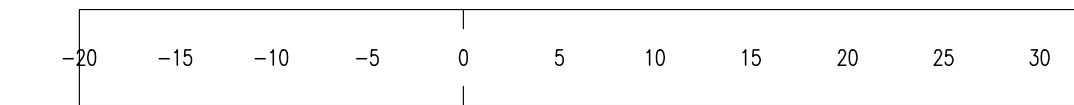
CROSS_SECTIONS

SHEET NO. 028 OF 35

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0 20 40
SCALE IN FEET



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KENWOOD AVE MILL & OVERLAY

CITY PROJECT NO.: 1602

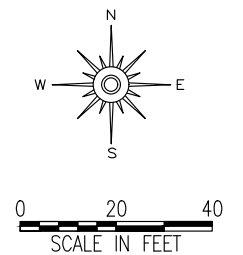
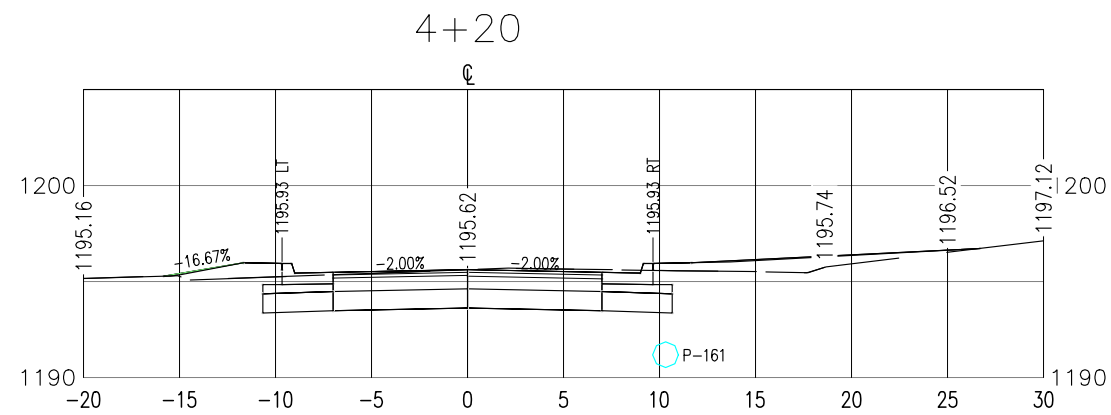
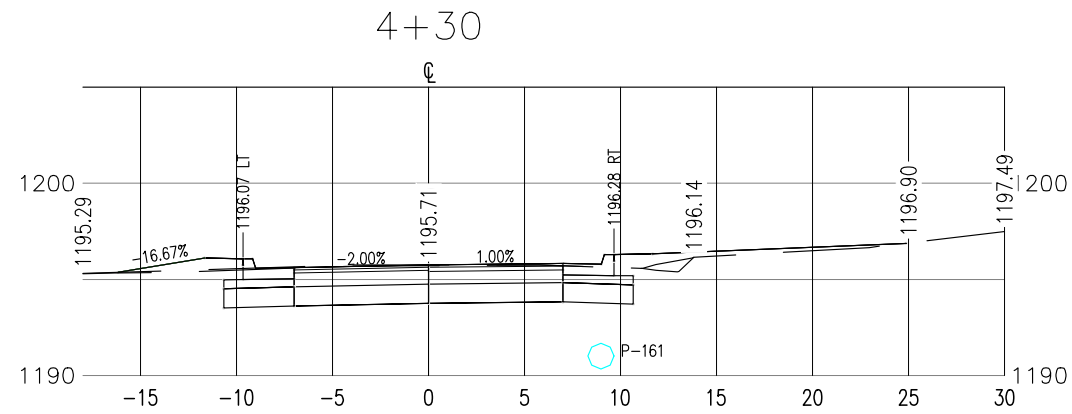
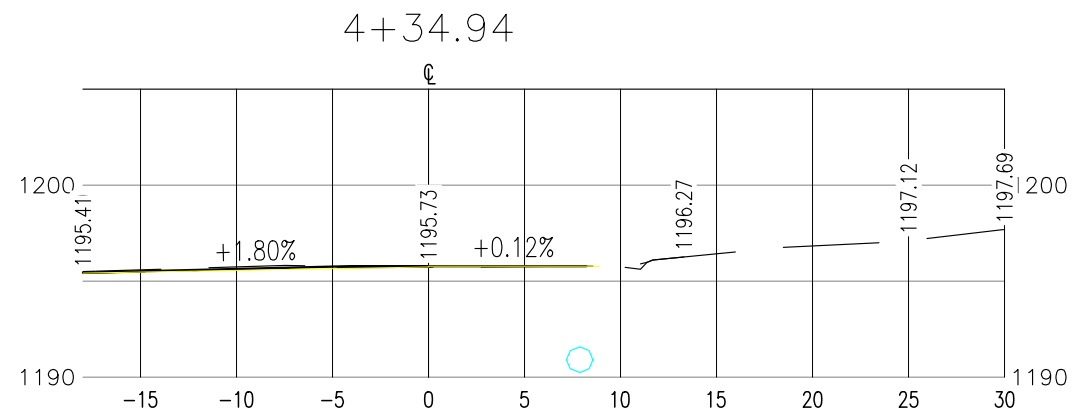
STATE AID PROJECT NO.: 118-151-013

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CROS_ SECTIONS

SHEET NO. 029 OF 35

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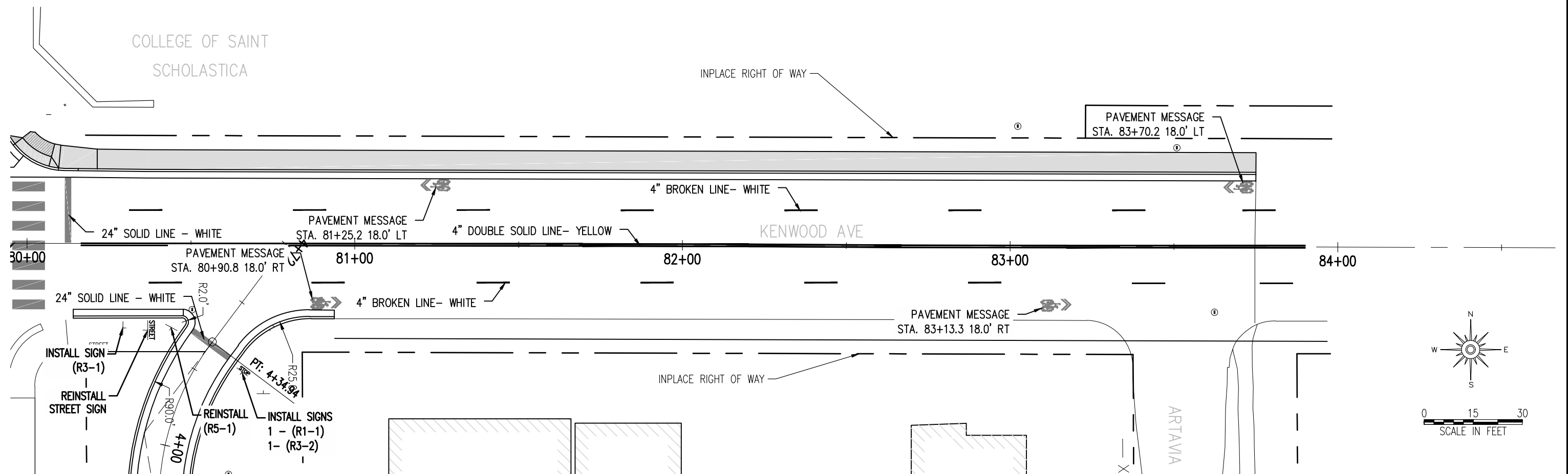
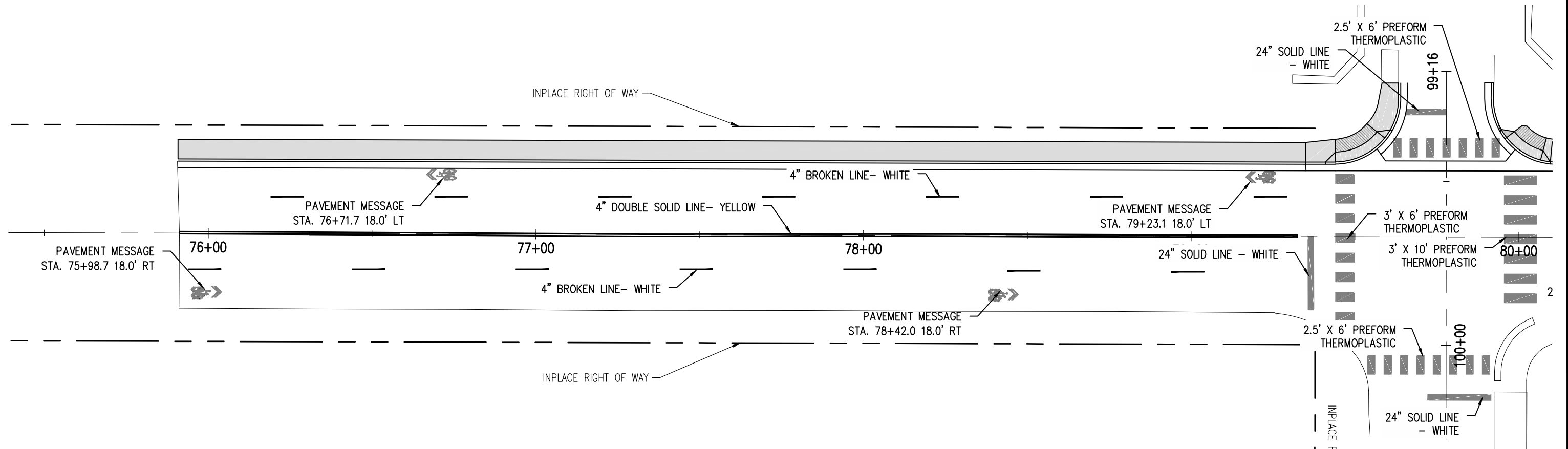
STATE AID PROJECT NO.: 118-151-013

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CROSS SECTIONS

SHEET NO. 030 OF 35

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SIGNATURE: *Duncan C. Schwensohn*

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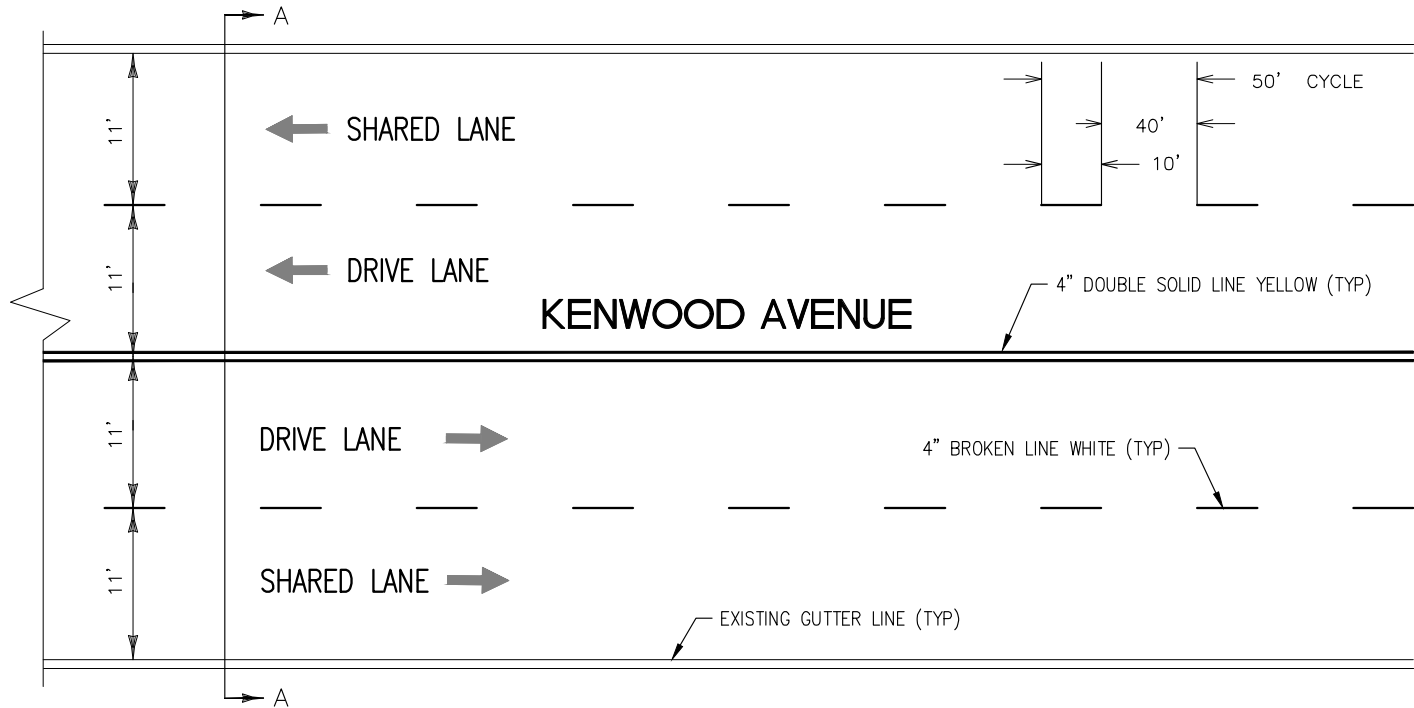
STATE AID PROJECT NO.: 118-151-013

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PAVEMENT MARKINGS

SHEET NO. 031 OF 35

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PAVEMENT MARKING

PERMANENT PAVEMENT MARKING NOTES & GUIDELINES

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

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

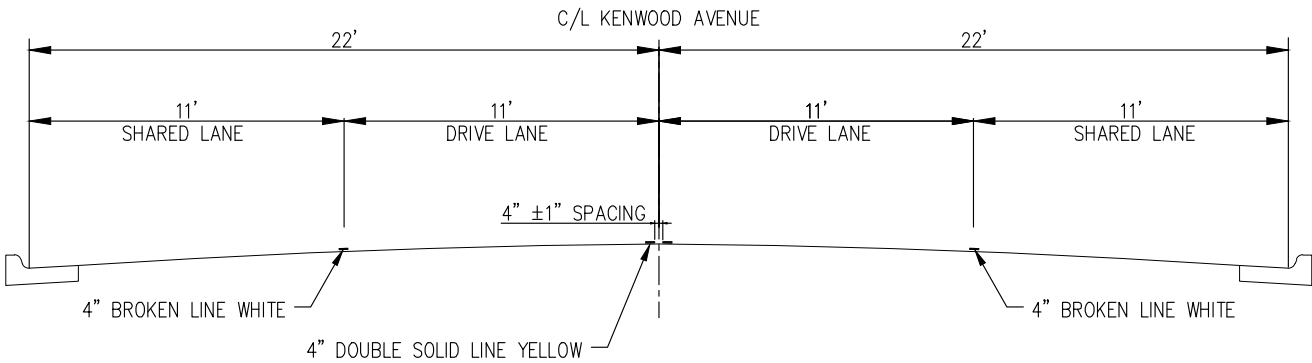
A TOLERANCE OF 1/4 INCH UNDER OR 1/4 INCH OVER THE SPECIFIED WIDTH WILL BE ALLOWED FOR STRIPING PROVIDED THE VARIATION IS GRADUAL AND DOES NOT DETRACT FROM THE GENERAL APPEARANCE. BROKEN LINE SEGMENTS MAY VARY UP TO ONE-HALF FOOT FROM THE SPECIFIED LENGTHS PROVIDED THE OVER AND UNDER VARIATIONS ARE REASONABLY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

PAINT:
THE ROAD SURFACE SHALL BE CLEANED AT THE DIRECTION OF THE ENGINEER JUST PRIOR TO APPLICATION. PAVEMENT CLEANING SHALL CONSIST OF AT LEAST BRUSHING WITH A ROTARY BROOM (NON-METALLIC) OR AS RECOMMENDED BY THE MATERIAL MANUFACTURER AND ACCEPTABLE TO THE ENGINEER. NEW PORTLAND CEMENT CONCRETE SURFACES SHALL BE SANDBLAST CLEANED TO REMOVE ANY SURFACE TREATMENTS AND/OR LAITANCE. ON LOW SPEED (SPEED LIMIT 35 OR LESS) URBAN PORTLAND CEMENT CONCRETE ROADWAYS, SANDBLAST CLEANING SHALL BE USED FOR ALL EPOXY PAVEMENT MARKINGS.

THE PAINT MARKING APPLICATION SHALL IMMEDIATELY FOLLOW THE PAVEMENT CLEANING. GLASS BEADS SHALL BE APPLIED IMMEDIATELY AFTER APPLICATION OF THE PAINT RESIN LINE TO PROVIDE AN IMMEDIATE NO-TRACK SYSTEM.

FOR 15 MIL APPLICATIONS, GLASS BEADS SHALL BE APPLIED AT A RATE OF AT LEAST 25 LB/GAL. THE "NO-TRACKING" CONDITION SHALL BE DETERMINED ON AN APPLICATION OF SPECIFIED THICKNESS TO THE PAVEMENT AND COVERED WITH GLASS BEADS AT THE RATE OF AT LEAST 25 LB/GAL. OPERATIONS SHALL BE CONDUCTED ONLY WHEN THE ROAD PAVEMENT SURFACE TEMPERATURES ARE 50 DEGREES F OR GREATER.

PERMANENT MARKINGS SHALL NOT BE PLACED OVER TEMPORARY TAPE MARKINGS.



SECTION A-A

SEE SHEET 31 FOR LOCATIONS

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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DULUTH, MN 55802

KENWOOD AVE MILL & OVERLAY

CITY PROJECT NO.: 1602

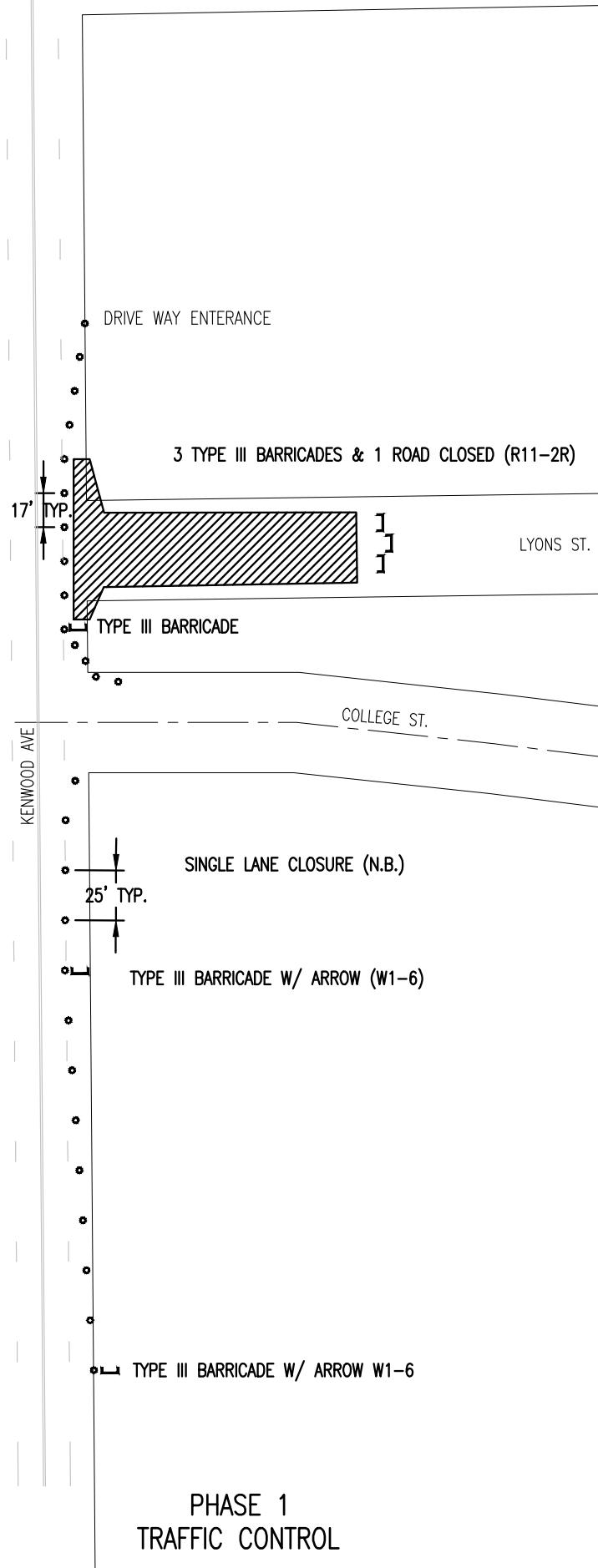
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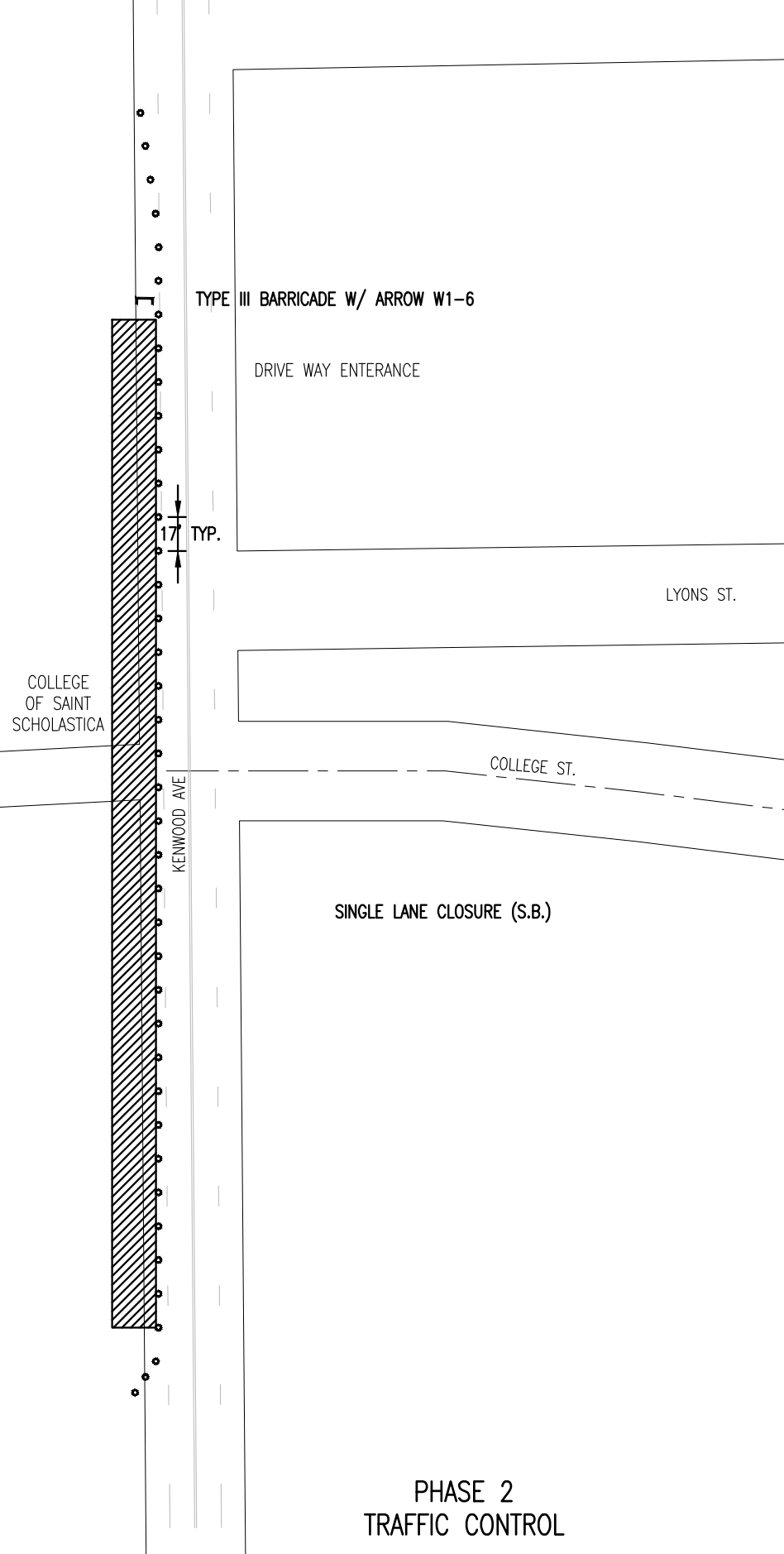
PAVEMENT MARKINGS

SHEET NO. 032 OF 35

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PHASE 1
TRAFFIC CONTROL

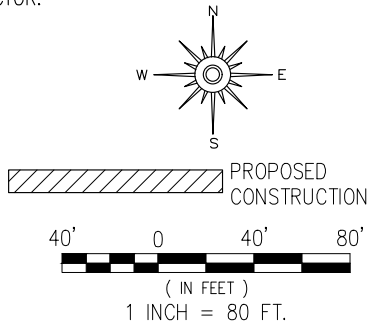
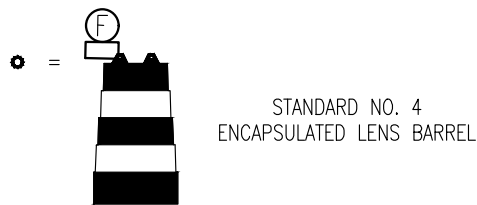


PHASE 2
TRAFFIC CONTROL

TRAFFIC CONTROL NOTES

1. INSTALLED BY THE CONTRACTOR. ALL APPROPRIATE SIGNING SHALL BE MAINTAINED DURING THE LIFE OF THE CONTRACT.
2. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO AND BE PLACED IN ACCORDANCE WITH THE LATEST VERSION OF THE MINNESOTA STANDARD SIGNS MANUALS I,II, AND III, AND THE APPROPRIATE MATERIAL SPECIFICATIONS. THE CONTRACTOR SHALL PROVIDE ALL SIGNING REQUIRED BUT NOT ITEMIZED IN THIS TRAFFIC CONTROL PLAN.
3. MAINTENANCE OF LOCAL AND THROUGH TRAFFIC IS THE RESPONSIBILITY OF THE CONTRACTOR. PROPERTY OWNERS SHALL HAVE ACCESS AT ALL TIMES.
4. THE CONTRACTOR SHALL PLACE ADEQUATE PLASTIC DRUMS, WARNING SIGNS, AND BARRICADES WITHIN THE CONSTRUCTION ZONE TO PROTECT VEHICULAR TRAFFIC AND PEDESTRIAN TRAFFIC FROM CONSTRUCTION OPERATIONS. ADDITIONAL SIGNING MAY INCLUDE, BUT IS NOT LIMITED TO CHANNELIZATION OF TRAFFIC, BUMP, DIP, LOOSE GRAVEL, ETC.. THE NUMBER AND LOCATIONS OF TRAFFIC CONTROL DEVICES SHALL BE DETERMINED BY THE SEQUENCE OF THE CONTRACTORS OPERATIONS. TRAFFIC CONTROL DEVICES MAY BE ADJUSTED IN THE FIELD AS DIRECTED BY ENGINEER.
5. TEMPORARY LANE CLOSURES BY THE CONTRACTOR WILL BE PERMITTED DURING THOSE HOURS AND AT THOSE LOCATIONS APPROVED BY THE ENGINEER, IN ACCORDANCE WITH THE PERTINENT LAYOUTS SHOWN IN APPENDIX "B" OF THE MMUTCD. ALL SUCH WORK RELATING TO THE CLOSURES, INCLUDING FLAGPERSONS, SHALL BE CONSTRUED TO BE INCLUDED IN THE LUMP SUM PAYMENT UNDER ITEM NO. 2563.601 (TRAFFIC CONTROL).
6. ALL WARNING SIGNS ARE TO BE 48" X 48", BLACK ON ORANGE WITH HIGH INTENSITY OR "DIAMOND GRADE" RETROREFLECTIVE SHEETING. ALL BLACK ON ORANGE WORK ZONE TRAFFIC CONTROL SIGNS; ORANGE AND WHITE TYPE I, TYPE II, AND TYPE III BARRICADES; DETOUR ROUTE MARKERS, AND ALL OTHER RIGID SIGNS INSTALLED TO CONTROL AND DIRECT TRAFFIC DURING CONSTRUCTION OPERATIONS SHALL BE CONSTRUCTED OF HIGH INTENSITY OR "DIAMOND GRADE" RETROREFLECTIVE SHEETING.
7. TYPE A (LOW INTENSITY) FLASHERS SHALL BE FURNISHED, INSTALLED, AND MAINTAINED ON ALL TYPE III BARRICADES AND ADVANCED WARNING SIGNS AS DETAILED IN THIS TRAFFIC CONTROL PLAN. ADDITIONAL FLASHERS SHALL BE FURNISHED, INSTALLED AND MAINTAINED ON SIGNS, BARRICADES, AND CHANNELIZERS AS NEEDED OR AS DIRECTED BY THE ENGINEER FOR TRAFFIC CONTROL THROUGH WORK ZONES WITHIN THE PROJECT LIMITS.
8. ~~FLAGGING SHALL BE REQUIRED WHEN WORKING AT THE EDGE OF THE DRIVING LANE TO PROTECT TRAFFIC FROM SEAL COATING OPERATIONS. FLAGGING SHALL BE IN ACCORDANCE WITH THE PERTINENT LAYOUT SHOWN IN PART VI OF THE MMUTCD INCLUDING THE CURRENT FIELD MANUAL. FLAGGERS SHALL USE TWO-WAY RADIOS FOR COMMUNICATION IN THE EVENT THEY ARE NOT IN SIGHT OF EACH OTHER OR AT THE DIRECTION OF THE ENGINEER. ALL SUCH WORK RELATED TO FLAGGING, INCLUDING FLAGPERSONS, SHALL BE INCLUDED IN THE LUMP SUM PAYMENT FOR TRAFFIC CONTROL (2563.601)~~
9. THE INITIAL CONSTRUCTION SIGNING SHALL BE ERECTED PRIOR TO THE CONSTRUCTION OPERATIONS THAT WILL AFFECT THE TRAVELING PUBLIC.
10. ALL TRAFFIC CONTROL DEVICES SHALL BE REMOVED OR COVERED AS SOON AS THEY ARE NO LONGER REQUIRED OR APPROPRIATE.
11. THE CONTRACTOR SHALL FOLLOW THIS TRAFFIC CONTROL PLAN ALONG WITH SPECIFICATIONS 1404, 1710, THE SPECIAL PROVISIONS, AND THE GUIDELINES FOR TRAFFIC CONTROL TREATMENT OF LONGITUDINAL JOINTS AND EDGE DROP-OFFS IN WORK ZONES.
12. THE CONTRACTOR SHALL RECEIVE COMPENSATION FOR ALL WORK DESCRIBED HEREIN ON THE BASIS OF A LUMP SUM PAYMENT FOR TRAFFIC CONTROL (2563.601).
13. THE CONTRACTOR SHALL SUBMIT A SCHEDULE OF SIGNING AND A TRAFFIC CONTROL PLAN FOR MAINTAINING AND PROTECTING TRAFFIC THROUGH WORK AREAS WITHIN THE CONSTRUCTION ZONES. ALL TRAFFIC CONTROL PLANS AND SIGNING SHALL CONFORM TO THE MMUTCD INCLUDING PART VI AND THE CURRENT FIELD MANUAL. THIS PLAN SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AT THE PRECONSTRUCTION CONFERENCE.
14. ONLY SIGNS, BARRICADES, VERTICAL PANELS, DRUM-LIKE CHANNELIZERS, AND CONES THAT MEET THE REQUIREMENTS OF "QUALITY STANDARDS FOR WORK ZONE TRAFFIC CONTROL" AS OUTLINED IN THE CURRENT FIELD MANUAL SHALL BE USED ON THIS PROJECT. WORK SHALL NOT BEGIN UNTIL A DETERMINATION HAS BEEN MADE THAT THE TRAFFIC CONTROL DEVICES MEET THE QUALITY REQUIRED IN THIS STANDARD. COMPLIANCE WITH THIS REQUIREMENT, IN ACCORDANCE WITH THE FORGOING, SHALL BE CONSIDERED INCIDENTAL WORK AND NO DIRECT COMPENSATION WILL BE MADE THEREFORE.
15. SIGNING SHALL NOT BE MOUNTED ON EXISTING SIGNS OR SIGNPOSTS. THEY SHALL BE MOUNTED ON THEIR OWN SIGN POST FURNISHED AND INSTALLED BY THE CONTRACTOR.

⊥ = SIGN ⊥ = TYPE III BARRICADE



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.

SIGNATURE: _____

DUNCAN SCHWENSOHN
TYPE NAME

DATE: 6/13/2017

LIC. NO: 45486



CITY OF DULUTH
ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
DULUTH, MN 55802

KENWOOD AVE MILL & OVERLAY

CITY PROJECT NO.: 1602

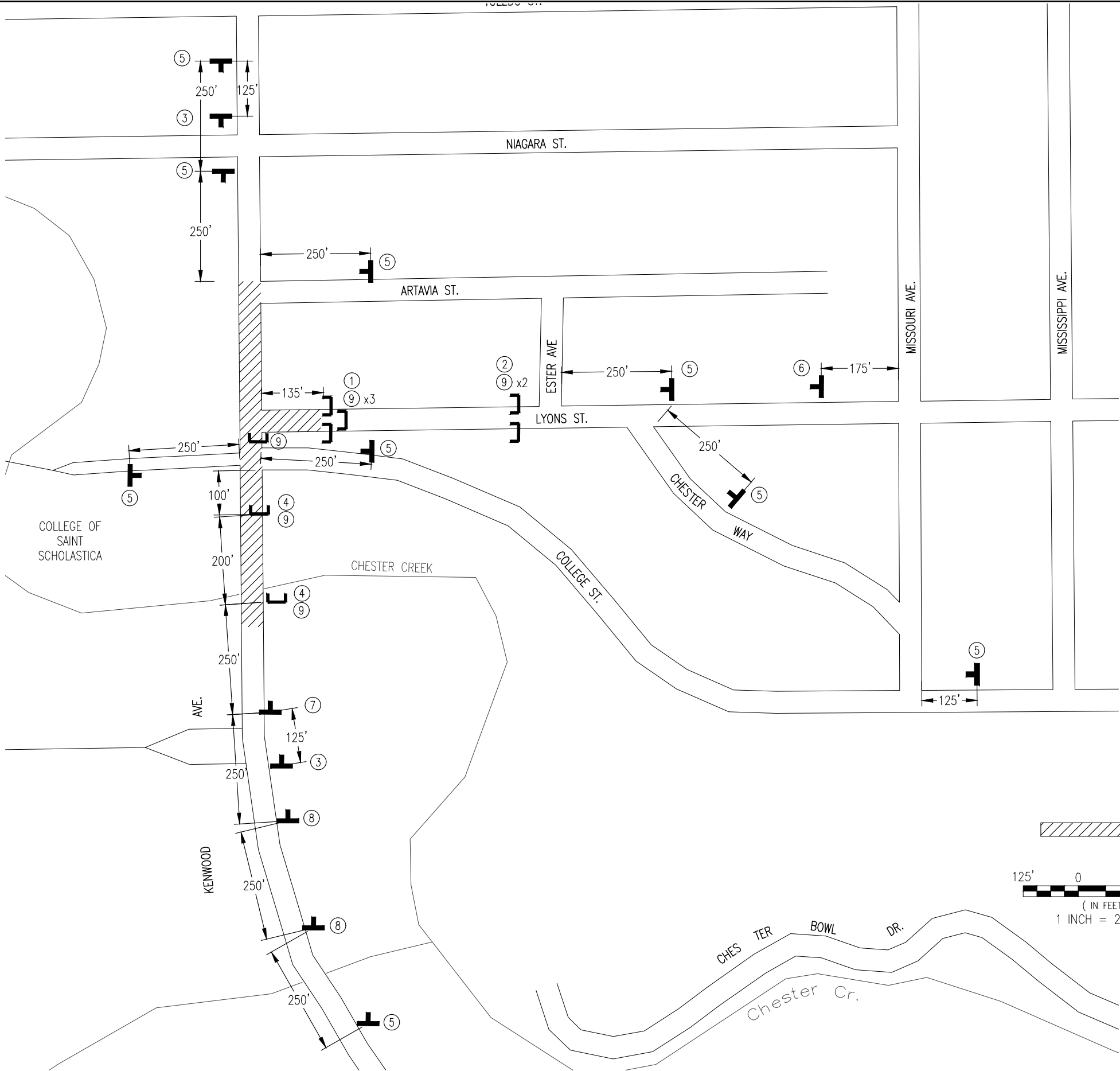
STATE AID PROJECT NO.: 118-151-013

DRAWN BY: DJK/SCA/BRC

TRAFFIC CONTROL

SHEET NO. 033 OF 35

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PLAN SYMBOL	KEY NOTE	SIGN NO.	MESSAGE	SIZE	QNTY
	①	R11-2R ON TYPE III BARRICADE	ROAD CLOSED	48" x 30"	1
	②	R11-4 ON TYPE III BARRICADE	ROAD CLOSED TO THRU TRAFFIC	60" x 30"	1
	③	SPECIAL	LYONS ST CLOSED AHEAD	36" x 24"	2
	④	W1-6 ON TYPE III BARRICADE		48" x 24"	2
	⑤	W20-1		36" x 36"	8
	⑥	W20-3		36" x 36"	1
	⑦	W20-X3L		36" x 36"	1
	⑧	W21-X5R		36" x 36"	2
	⑨	TYPE III BARRICADE		8 FOOT	8

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.

SIGNATURE: _____

DUNCAN SCHWENSOHN
TYPE NAME

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CITY OF DULUTH
ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
DULUTH, MN 55802

KENWOOD AVE MILL & OVERLAY

CITY PROJECT NO.: 1602

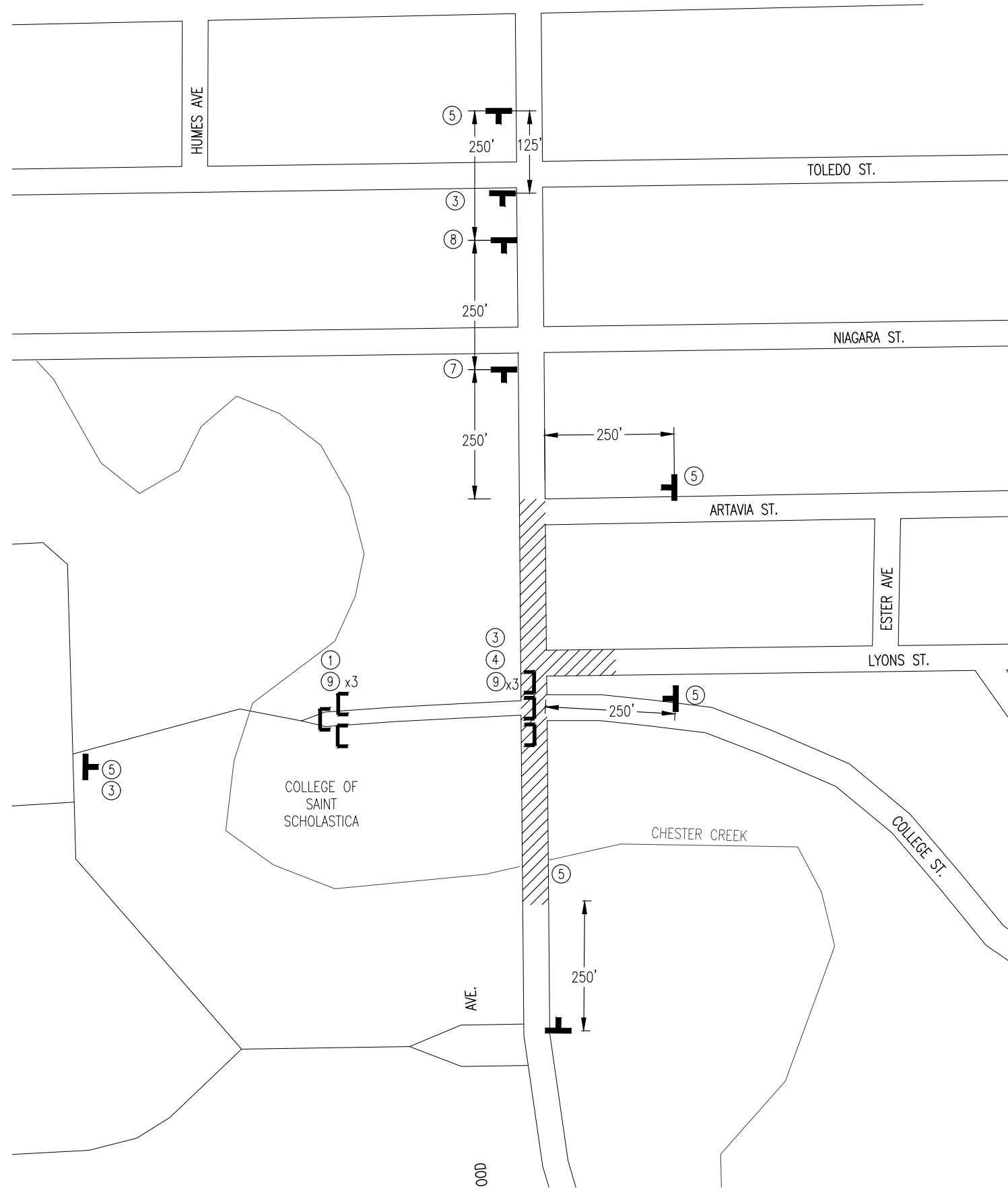
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DRAWN BY: DJK/SCA/BRC

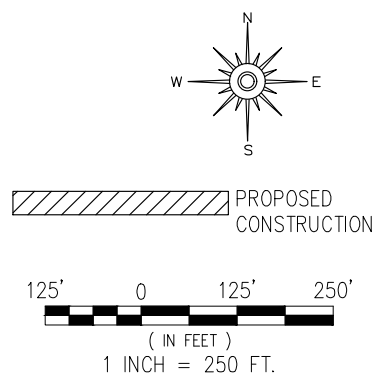
TRAFFIC CONTROL

SHEET NO. 34 OF 35

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PHASE 2
TRAFFIC
CONTROL



NOTE:
ST. SCHOLASTICA ENTRANCE MUST BE OPEN BETWEEN THE
HOURS OF 6AM - 6PM MONDAY THROUGH FRIDAY
BEGINNING AUGUST 31, 2017 AND ON SEPTEMBER 2 & 3, 2017.

PLAN SYMBOL	KEY NOTE	SIGN NO.	MESSAGE	SIZE	QNTY
	①	R11-2R ON TYPE III BARRICADE	ROAD CLOSED	48" x 30"	1
	③	SPECIAL	ST SCHOLASTICA NORTH ENTRANCE CLOSED USE SOUTH ENTRANCE	36" x 24"	3
	④	W1-6 ON TYPE III BARRICADE		48" x 24"	2
	⑤	W20-1		36" x 36"	5
	⑥	W20-5		36" x 36"	1
	⑦	W20-X3L		36" x 36"	1
	⑧	W21-X5R		36" x 36"	2
	⑨	TYPE III BARRICADE		8 FOOT	6

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

SIGNATURE: _____ DUNCAN SCHWENSOHN
TYPE NAME

DATE: 6/13/2017
LIC. NO: 45486



CITY OF DULUTH
ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
DULUTH, MN 55802

KENWOOD AVE MILL & OVERLAY
CITY PROJECT NO.: 1602
STATE AID PROJECT NO.: 118-151-013

DRAWN BY: DJK/SCA/BRC
TRAFFIC CONTROL
SHEET NO. 035 OF 35