

PLAN SYMBOLS

SECTION SUBDIVISION LINE	---
EXISTING R/W	---
NEW R/W	---
PERMANENT EASEMENT	---
TEMPORARY EASEMENT	---
RAILROAD R/W	---
UNSURFACED RD. OR SHLD.	---
MISCELLANEOUS BOUNDARY	---
CORPORATE OR CITY LIMITS	---
PROPERTY LINE	---
RECREATIONAL TRAIL	---
ALIGNMENT STATIONS	---
ALIGNMENT POINTS	---
DRAINAGE DITCH	---
BARBED WIRE FENCE	---
CHAIN LINK FENCE	---
WOVEN WIRE, COMBINATION WOVEN AND BARB	---
WOOD FENCE	---
RETAINING WALL	---
GUARDRAIL (CABLE)	---
AUGER REFUSAL (BEDROCK)	---
GROUNDWATER OBSERVED	---
DRAIN TILE	---
CULVERT	---
CULVERT WITH APRONS	---
CATCH BASIN	---
WOODS OR BRUSH, NURSERY	---
DECIDUOUS TREES	---
CONIFER (EVERGREEN) TREES	---
HEDGE	---
BUSH OR SHRUB	---
STUMP	---
MONUMENT (CI, ACT, ACP, BCP, ...)	---
CONCRETE OR STONE MONUMENT	---
IRON PIPE	---
IRON PIN OR REBAR	---
IRON PIN WITH BRASS DISK	---
NAIL, PK NAIL, SPIKE, SFP, T-BAR, ...	---
VERTICAL CONTROL	---
HORIZONTAL CONTROL	---
POWER POLE	---
LIGHT POLE	---
LIGHT AND TELEPHONE POLE	---
LIGHT, TELEPHONE AND POWER POLE	---
GUY POLE	---
POLE ANCHOR	---
TELEPHONE POLE	---
TELEPHONE AND POWER POLE	---
UNDERGROUND CABLE PEDESTAL	---
TELEPHONE MANHOLE (VAULT)	---
TRAFFIC SIGNAL LIGHT	---
HAND HOLE	---
BURIED ELECTRIC CABLE	---
BURIED FIBER OPTIC CABLE	---
BURIED FIBER OPTIC CABLE (NESC)	---
BURIED TELEPHONE CABLE	---
BURIED TELEPHONE CABLE IN CLAY DUCT	---
BURIED TELEPHONE CABLE IN ASBESTOS PIPE	---
BURIED TELEPHONE CABLE IN LEAD PIPE	---
MULTIPLE BURIED TELEPHONE CABLES	---
SANITARY MAIN	---
SANITARY SERVICE	---
1&1 LINE	---
STORM SEWER LINE	---
ROAD SUBDRAIN	---
WATER MAIN	---
WATER SERVICE	---
GAS MAIN	---
GAS SERVICE	---
WATER SHUT-OFF VALVE	---
VALVE	---
FIRE HYDRANT	---
WATER MANHOLE	---
WELL	---
SEPTIC TANK	---
FORCE MAIN LIFT STA.	---
PERMANENT BARRICADE	---
SOIL BORING	---
ENTRANCE	---
BUILDING	---
SATELLITE DISH	---
STEEL TOWER	---
FLAG POLE	---

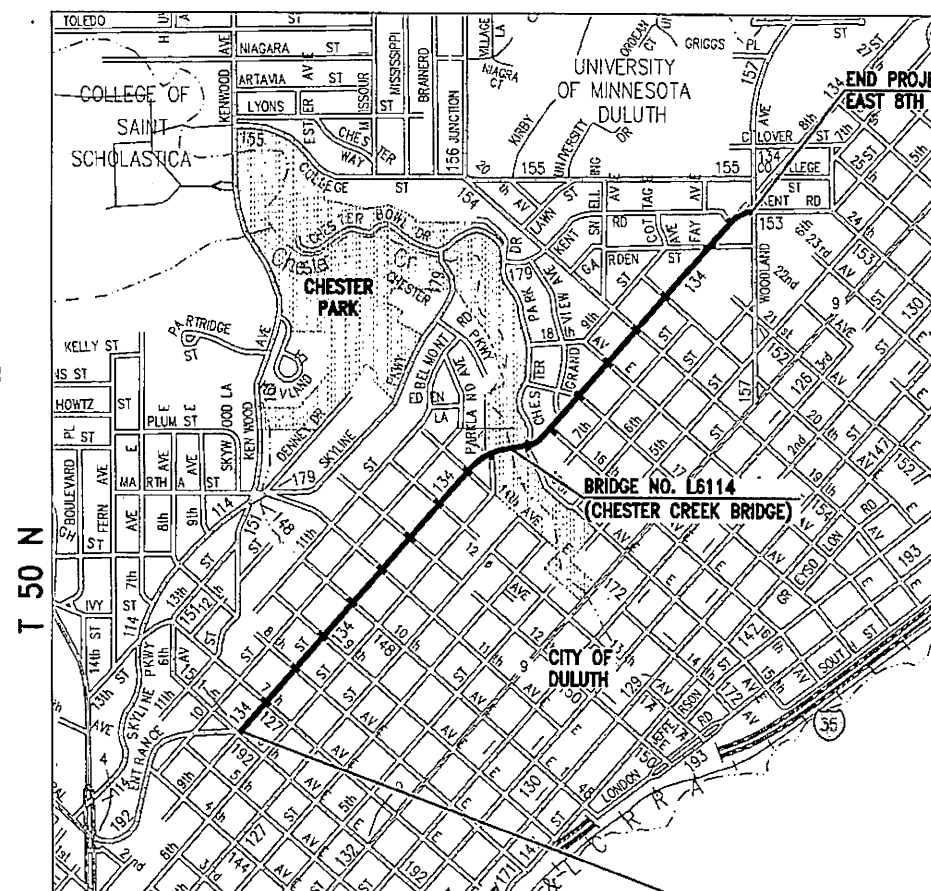
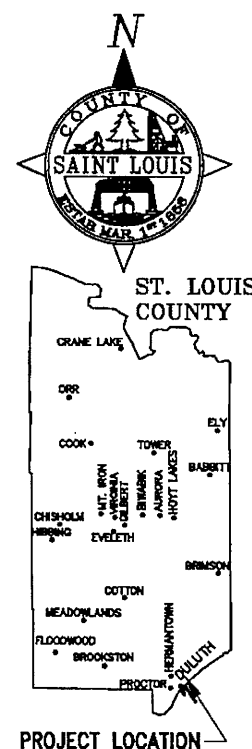
MINNESOTA DEPARTMENT OF TRANSPORTATION CITY OF DULUTH DEPARTMENT OF PUBLIC WORKS AND UTILITIES ENGINEERING DIVISION

CONSTRUCTION PLAN FOR EAST 9TH STREET/EAST 8TH STREET RECONDITIONING MILLING, BITUMINOUS PAVEMENT, CONCRETE PAVEMENT, ADA IMPROVEMENTS, SIDEWALK, STORM SEWER AND CURB & GUTTER

LOCATION: ON E 9TH ST (MSAS 134) FROM 82.0 FEET EAST OF THE CENTERLINE ON N 6TH AVE E (MSAS 192) TO 60.0 FEET WEST OF THE CENTERLINE OF WOODLAND AVE (MSAS 157) ON E 8TH ST

S.P. No. 118-134-017

GROSS LENGTH	7872.25	FEET	1.491	MILES
BRIDGES-LENGTH	280	FEET	0.049	MILES
EXCEPTIONS-LENGTH	---	FEET	---	MILES
NET LENGTH	7872.25	FEET	1.491	MILES



END PROJECT: S.P. 118-134-017
EAST 8TH ST. STA. 80+38.30

BEGIN PROJECT: S.P. 118-134-017
EAST 9TH ST. STA. 1+66.05

UTILITY NOTE

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 OF EXISTING SUBSURFACE UTILITY DATA".

SCALES

PLAN	20 ft.
INDEX MAP	2000 ft.



PERFORMANCE
DRIVEN DESIGN.
LHBcorp.com

21 W. Superior St., Ste. 500
Duluth, MN 55802
218.727.8446

PLAN REVISIONS

DATE	SHEET NO.	APPROVED BY

MN. PROJECT No. STPF 6918(260)

GOVERNING SPECIFICATIONS

THE 2015 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION
"STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

THE CITY OF DULUTH PUBLIC WORKS AND UTILITIES DEPARTMENT ENGINEERING DIVISION
2017 EDITION STANDARD CONSTRUCTION SPECIFICATION SHALL APPLY.

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2-3	STATEMENT OF ESTIMATED QUANTITIES
4	STD PLATES, NOTES, & CHART INDEX
5-19	CHARTS
20	TYPICAL SECTIONS
21-41	CONSTRUCTION DETAILS
42-46	TRAFFIC CONTROL PLAN
47-53	CONSTRUCTION PLAN
54-55	PAVEMENT MARKING PLAN
56-58	SIGNING PLAN

- THIS PLAN CONTAINS 58 SHEETS -

DESIGN DESIGNATION

PROJECT	2018
R VALUE = N/A	2018
ADT (Current Year) 2018	5600
ADT (Future Year) 2038	6200
HCAAT (Current)	3%
HCAAT (Future)	3%
D (Directional Distr.)	50/50
T (Heavy Commercial)	---
Proj. Soil Factor	10
Shoulder Width	N/A
Design Loading	N/A
Design Speed 30 MPH	---
Based on STOPPING Sight Distance	---
Height Of Eye 3.5 ft.	Height of object 2.0 ft.
Design Speed not achieved at:	---
Urban Classification	COLLECTOR
Traffic Lanes	2
Parking Lanes	2

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.

PRINT NAME: BRAD SCOTT

SIGNATURE: *Brad Scott*

DATE: 03/16/2017 LIC. #: 46198

CITY APPROVALS

APPROVED: DULUTH CITY ENGINEER

DATE: 3/16/18

APPROVED: DULUTH CHIEF ENGINEER OF TRANSPORTATION

DATE: 3/16/18

APPROVED: DULUTH CHIEF ENGINEER OF UTILITIES

DATE: 3/16/18

STATE AID APPROVALS

DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE
WITH STATE-AID RULES/POLICY

DATE: 3-21-18

STATE AID ENGINEER: APPROVED FOR FEDERAL AID AND
STATE AID FUNDING

DATE: 5/14/18

NOTE: REFER TO INDIVIDUAL PLAN SECTIONS FOR ADDITIONAL LEGEND INFORMATION.

CITY OF DULUTH PROJECT: 0855TR S.P. 118-134-017

SHEET 1 OF 58 SHEETS

PLOT DATE: 5/14/2018 8:14:49 AM FILE: J:\17Pro\170650\600 Drawings\170650 02-SQ.dwg

STATEMENT OF ESTIMATED QUANTITIES									
NOTES	CHART	SHEET NO.	ITEM NO.	DESCRIPTION	UNITS	TOTAL PROJECT	NON-PARTICIPATING	S.P. 118-134-017	
						TOTAL ESTIMATED QUANTITY	WATER	PARTICIPATING	
								ROADWAY	STORM
			2021.501	MOBILIZATION	LUMP SUM	1		1	
			2101.507	GRUBBING	TREE	7		7	
	A, C		2104.503	REMOVE SIDEWALK	SQ FT	12 489		12 489	
	B		2104.505	REMOVE CONCRETE DRIVEWAY PAVEMENT	SQ YD	535		535	
5, 9	C,D,G		2104.505	REMOVE CONCRETE PAVEMENT	SQ YD	6 032		6032	
	G		2104.509	REMOVE CATCH BASIN	EACH	65			65
	G		2104.509	REMOVE CASTING	EACH	2			2
	F		2104.509	REMOVE HYDRANT	EACH	1	1		
	B,C,G		2104.511	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LIN FT	12 001		11 733	268
	S-1		2104.523	SALVAGE SIGN TYPE C	EACH	29		29	
	C		2104.618	SALVAGE BRICK PAVERS	SQ FT	118		118	
	D		2105.522	SELECT GRANULAR BORROW MOD 7% (CV)	CU YD	210		210	
	E		2123.610	STREET SWEEPER (WITH PICKUP BROOM)	HOURL	10		10	
	D, G		2211.503	AGGREGATE BASE (CV) CLASS 5 (P)	CU YD	185		105	80
2	E	20	2232.501	MILL BITUMINOUS SURFACE (3.0") (P)	SQ YD	35 800		35 800	
	D	41	2301.504	CONCRETE PAVEMENT 8.0"	SQ YD	574		574	
	D		2301.508	SUPPLEMENTAL PAVEMENT REINFORCEMENT	POUND	1 492		1 492	
	C,D,G		2301.511	STRUCTURAL CONCRETE	CU YD	632		605	27
	D		2301.538	DOWEL BAR	EACH	232		232	
	C, G		2301.602	DRILL AND GROUT REINFORCEMENT BAR (EPOXY COATED)	EACH	3 549		3 415	134
	C, G	35,36	2301.604	CONCRETE PAVEMENT (SPECIAL)	SQ YD	2 418		2 277	141
	D	37	2302.603	FULL DEPTH REPAIR (TYPE CD-HV)	LIN FT	916		916	
1, 3, 4	E	20	2360.501	TYPE SP 9.5 WEARING COURSE MIXTURE (3,B)	TON	6 444		6 444	
	C,D		2401.541	REINFORCEMENT BARS (EPOXY COATED)	POUND	4 227		4 227	
	A		2411.603	CONCRETE RETAINING WALL, TYPE L	LIN FT	24		24	
	G		2503.503	12" RC PIPE SEWER DES 3006 CL III	LIN FT	18			18
	F		2504.602	HYDRANT ASSEMBLY	EACH	1	1		
	F		2504.602	ADJUST CURB STOP	EACH	10	10		
	F		2504.602	CONCRETE ENCASED VALVE BOX COVER IN ROADWAY	EACH	49		49	

NOTES

1. QUANTITY INCLUDES 50 TONS TO BE USED AS DIRECTED BY THE ENGINEER FOR PATCHING POTHoles AND PAVEMENT DETERIORATIONS PRIOR TO PAVING.
2. ALL MILLINGS SHALL BE PROPERLY DISPOSED OF BY THE CONTRACTOR AT AN APPROVED LOCATION OR CAN BECOME THE PROPERTY OF THE CONTRACTOR. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO MILL BITUMINOUS SURFACE.
3. BITUMINOUS MATERIAL FOR TACK COAT (SPEC. 2357) SHALL BE PLACED BETWEEN ALL LIFTS AND ON MILLED SURFACE AND SHALL BE CONSIDERED INCIDENTAL.
4. PAVING OF FIRST LIFT OF BITUMINOUS SHALL BE COMPLETED WITHIN 3 DAYS OF MILLING. STRING LINE SHALL BE USED ON ALL LIFTS FOR A GUIDE OF PAVING OPERATIONS.
5. INCLUDES REMOVAL OF CURB & GUTTER.
6. REPLACE OLD MONUMENT CASTINGS WITH NEW MONUMENT CASTINGS PROVIDED BY CITY OF DULUTH. CONTRACTOR TO INSTALL NEW CASTINGS. CALL NATHAN LAVINE AT (218)348-8814 FOR CASTING LOCATIONS.
7. IF MILLING PROCESS DESTROYS SURVEY MONUMENT A NEW MONUMENT MUST BE CONSTRUCTED AT NO COST TO THE CITY OF DULUTH.
8. UNDISTRIBUTED QUANTITY TO BE PLACED AT DIRECTION OF THE ENGINEER.
9. CONTRACTOR SHALL REMOVE AND DISPOSE OF INPLACE BOULEVARD STAIRS OR BOULEVARD WALKS BETWEEN INPLACE WALK AND INPLACE CURB TO BE REMOVED. BACKFILL WITH SUITABLE MATERIAL FROM EXCAVATION AND PLACE 4-INCHES OF TOPSOIL, SEED AND BLANKET (INCIDENTAL).

LHB PROJECT NO. 170650

I HEREBY CERTIFY that this plan, specification or report 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.

BRAD SCOTT
PRINTED NAME


SIGNATURE

05/11/2018
DATE
46198
LIC. NO.

E 9TH/8TH ST RECONDITIONING
CITY PROJECT NO. 0855TR

S.P. 118-134-017

STATEMENT OF ESTIMATED QUANTITIES
SHEET NO. 2 OF 58 SHEETS

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STATEMENT OF ESTIMATED QUANTITIES									
NOTES	CHART	SHEET NO.	ITEM NO.	DESCRIPTION	UNITS	TOTAL PROJECT	NON-PARTICIPATING	S.P. 118-134-017	
						TOTAL ESTIMATED QUANTITY	WATER	PARTICIPATING	
								ROADWAY	STORM
	G		2506.502	CONSTRUCT DRAINAGE STRUCTURE DESIGN G	EACH	61			61
	G		2506.502	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL	EACH	6			6
	F		2506.516	CASTING ASSEMBLY	EACH	2		2	
	F		2506.522	ADJUST FRAME AND RING CASTING	EACH	4		4	
	F		2506.602	CONCRETE ENCASED CASTING COLLAR	EACH	61			61
	C		2521.501	4" CONCRETE WALK	SQ FT	1 048		1 048	
	A		2521.618	CONCRETE WALK	SQ FT	13 973		13 973	
	C	20	2531.501	CONCRETE CURB AND GUTTER B424 (MODIFIED)	LIN FT	3 280		3 280	
	C	20	2531.501	CONCRETE CURB AND GUTTER B624	LIN FT	6 967		6 967	
	B		2531.507	7" CONCRETE DRIVEWAY PAVEMENT	SQ YD	546		546	
	A		2531.603	CONCRETE CURB DESIGN V	LIN FT	68		68	
	A		2531.618	TRUNCATED DOMES	SQ FT	1 006		1 006	
6, 7	G		2540.602	ADJUST MONUMENT BOX	EACH	3		3	
	C		2540.618	INSTALL BRICK PAVERS	SQ FT	118		118	
	I		2563.601	TRAFFIC CONTROL	LUMP SUM	1		1	
	S-2		2564.531	SIGN PANELS TYPE C	SQ FT	8.67		8.67	
	S-1		2564.537	INSTALL SIGN TYPE C	EACH	29		29	
			2573.531	STORM DRAIN INLET PROTECTION	LUMP SUM	1		1	
8			2574.508	FERTILIZER TYPE 1	POUND	259		259	
8			2574.575	SUBSOILING	ACRE	0.74		0.74	
8			2574.578	SOIL BED PREPARATION	ACRE	0.74		0.74	
8			2575.501	SEEDING	ACRE	0.74		0.74	
8			2575.502	SEED MIXTURE 25-251	POUND	112		112	
8			2575.523	EROSION CONTROL BLANKET CATEGORY 3N	SQ YD	3 600		3 600	
	A		2575.602	SITE RESTORATION	EACH	64		64	
	J		2580.603	INTERIM PAVEMENT MARKING	LIN FT	13 634		13 634	
	J		2582.501	PAVEMENT MESSAGE EPOXY	SQ FT	501		501	
	J		2582.502	6" SOLID LINE EPOXY	LIN FT	4 321		4 321	
	J		2582.502	4" DOUBLE SOLID LINE EPOXY	LIN FT	6 817		6 817	
	J		2582.502	4" SOLID LINE PREFORM TAPE	LIN FT	2 271		2 271	
	J		2582.502	12" SOLID LINE PREFORM THERMO GROUND IN	LIN FT	159		159	
	J		2582.503	CROSSWALK PREFORM THERMOPLASTIC GROUND IN	SQ FT	1 248		1 248	

LHB PROJECT NO. 170650

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BRAD SCOTT
PRINTED NAME


SIGNATURE

05/11/2018
DATE
46198
LIC. NO.

E 9TH/8TH ST RECONDITIONING
CITY PROJECT NO. 0855TR

S.P. 118-134-017

STATEMENT OF ESTIMATED QUANTITIES
SHEET NO. 3 OF 58 SHEETS

CONSTRUCTION NOTES

1. WITHIN THE PLAN WHEREVER THE WORD "INCIDENTAL" IS USED IT SHALL MEAN NO DIRECT PAYMENT WILL BE MADE FOR THAT ITEM.
2. WHENEVER THE PHRASE "MIN." IS USED IN THIS PLAN, IT SHALL MEAN THE WORD MINIMUM.
3. THE CONTRACTOR SHALL PRESERVE ALL LAND AND PROPERTY CORNERS, VERTICAL AND HORIZONTAL CONTROLS AND RIGHT OF WAY MONUMENTS.
4. PLACE ½" BIT FELT (FULL HEIGHT) AT ALL JOINTS WHERE PROPOSED CONCRETE DRIVEWAYS AND WALKS MEET EXISTING CONCRETE DRIVEWAYS, SIDEWALKS, OR RETAINING WALLS.
5. AVERAGE INPLACE PAVEMENT THICKNESSES ARE PROVIDED ON THE TYPICAL SECTION BASED ON HISTORIC PLAN INFORMATION. THE CONTRACTOR SHALL EXPECT INPLACE PAVEMENT DEPTHS TO VARY. PROJECT PAVEMENT CORES INDICATE BITUMINOUS VARIES BETWEEN 2.0" TO 5.5" WITH AN AVERAGE THICKNESS OF 3.0".
6. ALL AREAS DISTURBED BY THE CONTRACTOR'S EQUIPMENT WHICH ARE OUTSIDE THE PLANNED CONSTRUCTION LIMITS SHALL BE RESTORED, AS APPROVED BY THE ENGINEER, AT THE CONTRACTOR'S EXPENSE.
7. BITUMINOUS SURFACING, CONCRETE ITEMS, ABANDONED UTILITY ITEMS, OR ANY OTHER MATERIAL WHICH MAY BE ENCOUNTERED DURING CONSTRUCTION THAT ARE NOT SUITABLE FOR SALVAGE OR FOR ROADWAY CONSTRUCTION SHALL BE DISPOSED OF BY THE CONTRACTOR AT AN APPROVED DISPOSAL SITE AND SHALL BE INCIDENTAL TO THESE ITEMS.
8. THE CONTRACTOR SHALL PROVIDE A CONCRETE WASHOUT AND WASHOUT LOCATION AND CONTAINER ON THE PROJECT AND IT SHALL BE APPROVED BY THE ENGINEER PRIOR TO RELATED WORK. THE CONTRACTOR SHALL MAINTAIN THE CONTAINER AND DISPOSE OF ITS CONTENTS IN ACCORDANCE WITH MPCA REQUIREMENTS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO ALL CONCRETE ITEMS, FOR WHICH NO DIRECT COMPENSATION SHALL BE MADE.
9. THE CONTRACTOR IS ADVISED THAT THERE SHALL BE NO STOCKPILE OF MATERIALS ON SITE OUTSIDE THE PROJECT CONSTRUCTION LIMITS, UNLESS OTHERWISE NOTED.
10. BITUMINOUS TONNAGE COMPUTED AT 120 LBS/SQ YD/INCH OF THICKNESS.
11. PLACE BITUMINOUS MATERIAL FOR TACK COAT (SPEC 2357) IN BETWEEN BITUMINOUS LIFTS AT A RATE OF 0.03–0.05 GAL./SQ. YD. ON PAVED SURFACES AND 0.07–0.10 GAL./SQ. YD. ON MILLED SURFACES AND 0.5' OVERLAP ON LONGITUDINAL JOINTS WHICH SHALL BE CONSIDERED INCIDENTAL.
12. THE RIGHT–OF–WAY SHOWN IN THIS PLAN IS GRAPHICAL BASED ON CITY GIS.
13. CARE SHALL BE TAKEN BY THE CONTRACTOR SO AS NOT TO DAMAGE THE REMAINING MATERIALS DIRECTLY ADJACENT TO THE MATERIALS TO BE REMOVED.
14. ANY DAMAGE TO THE EXISTING MATERIAL RESULTING FROM THE MATERIAL REMOVAL OPERATIONS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
15. DURING MILLING AND OVERLAY OPERATIONS THE CONTRACTOR SHALL PROVIDE A STREET SWEEPER WITH PICKUP BROOM TO REMOVE EXCESS MILLINGS AND CLEAN THE MILLED SURFACE TO THE APPROVAL OF THE ENGINEER PRIOR TO APPLICATION OF TACK COAT (INCIDENTAL).
16. ALL LAYOUT ASSOCIATED WITH REMOVAL & CONSTRUCTION OF PEDESTRIAN RAMPS, SIDEWALK AND CURB & GUTTER SHALL BE DONE BY THE CONTRACTOR. CONTRACTOR SHALL PROTECT AND RESTRICT USE OF PEDESTRIAN RAMPS 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. REFER TO SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

UTILITIES

THE CONTRACTOR IS HEREBY REMINDED OF HIS RESPONSIBILITY UNDER STATE LAW TO CONTACT ALL UTILITIES THAT MAY HAVE FACILITIES IN THE AREA. CONTACT MUST BE MADE THROUGH GOPHER STATE ONE–CALL: 1–800–252–1166.

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 FOLLOWING UTILITY COMPANIES HAVE FACILITIES WITHIN THE PROJECT LIMITS:

- CENTURYLINK
- CHARTER COMMUNICATIONS
- CITY OF DULUTH (WATER, SANITARY, STORM & GAS)
- CONSOLIDATED COMMUNICATIONS
- FRONTIER COMMUNICATIONS
- INVOLTA
- MINNESOTA POWER
- NORTHEAST SERVICE COOPERATIVE
- PAUL BUNYAN COMMUNICATIONS
- WLSSD

MnDOT STANDARD PLATES

THE FOLLOWING STANDARD PLATES APPROVED BY FHWA SHALL APPLY ON THIS PROJECT	
PLATE NO.	DESCRIPTION
1070M	SUPPLEMENTAL PAVEMENT REINFORCEMENT
1150R	CONCRETE HEADER JOINTS
3000L	REINFORCED CONCRETE PIPE (5 SHEETS)
3006G	GASKET JOINT FOR R.C. PIPE (2 SHEETS)
4006L	MANHOLE OR CATCH BASIN PRECAST – DESIGNS G & H
4154B	CATCH BASIN GRATE CASTING
7020K	CONCRETE CURB (DESIGN B, V, S, DR, AND BR) (SHEET 1)
7038A	DETECTABLE WARNING SURFACE TRUNCATED DOMES
7111J	INSTALLATION OF CATCH BASIN CASTINGS
8000J	CHANNELIZERS – TYPE A, B, & C

CITY OF DULUTH STANDARD DETAILS

THE FOLLOWING DETAILS ARE APPROVED BY THE CITY OF DULUTH	
DETAIL NO.	DESCRIPTION
EX–4	CONCRETE STORM SEWER BEDDING
SAN–1	SANITARY CASTING DETAIL
SAN–3A	CONCRETE ENCASED CASTING COLALR FOR SANITARY MH IN ROADWAY, WALKS, & DRIVES
SAN–9	POLYETHYLENE MH ADJUSTING RING – FLAT
SAN–10	POLYETHYLENE MH ADJUSTING RING – WEDGE
STRM–1	STORM MANHOLE CASTING
STRM–3	CATCH BASIN CASTINGS
STRM–4	FABRIC WRAPPED CATCH BASIN CASTING
STRM–5A	CONCRETE ENCASED CASTING COLLAR FOR STORM MH IN ROADWAY, WALKS, & DRIVES
STRM–7	GUTTER STAMP
STR–6	CONCRETE RETAINING WALL, TYPE L
SUR–1	SURVEY MONUMENT
W–4	FIRE HYDRANT SETTING DETAIL – DUCTILE IRON
W–15	CAST IRON WATER MANHOLE FRAME AND COVER
W–19	CONCRETE ENCASED VALVE BOX COVER IN ROADWAY

CONSTRUCTION QUANTITY CHART INDEX

CHART NO.	DESCRIPTION	SHEET NO.
A	ADA RAMPS	5–7
B	DRIVEWAYS	8–9
C	CONCRETE ITEMS	9–12
D	CONCRETE PAVEMENT ITEMS	13
E	BITUMINOUS SURFACING	13
F	ADJUST STRUCTURES	14–17
G	CATCH BASIN REPLACEMENT	18–19
H	CASTING ASSEMBLIES	19
I	TRAFFIC CONTROL	42
J	PAVEMENT MARKINGS	54
S–1	SALVAGE & INSTALL SIGN TYPE C	56
S–2	SIGN PANELS TYPE C	56

LHB PROJECT NO. 170650

I HEREBY CERTIFY that this plan, specification or report 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.

BRAD SCOTT
PRINTED NAME


SIGNATURE

05/11/2018
DATE
46198
LIC. NO.

E 9TH/8TH ST RECONDITIONING

CITY PROJECT NO. 0855TR

S.P. 118–134–017

STD. PLATES, NOTES, & CHART INDEX

SHEET NO. 4 OF 58 SHEETS

PLOT DATE: 5/14/2018 8:15:07 AM FILE: J:\17Pro\170650\600 Drawings\CL170650_02-550.dwg

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A	ADA RAMPS									
CROSS STREET	QUADRANT	RAMP ID	RAMP DESIGN	SPEC. 2104	SPEC. 2521	SPEC. 2531	SPEC. 2531	SPEC. 2411	SPEC. 2575	REMARKS
				REMOVE SIDEWALK	CONCRETE WALK	TRUNCATED DOMES	CONCRETE CURB DESIGN V	CONCRETE RETAINING WALL, TYPE L	SITE RESTORATION	
				SQ FT	SQ FT	SQ FT	LIN FT	LIN FT	EACH	
N 7TH AVE E	NW	PED 01	DIAGONAL	156	182	12			1	STEEP SLOPE (EXCEEDS 8.3%) TO MATCH EXISTING GRADE
N 7TH AVE E	NE	PED 02	DIAGONAL	101	133	12			1	STEEP SLOPE (EXCEEDS 8.3%) TO MATCH EXISTING GRADE
N 7TH AVE E	SE	PED 03	DEPRESSED CORNER	133	134	14			1	
N 7TH AVE E	SW	PED 04A	PERPENDICULAR	101	144	10			0.5	
N 7TH AVE E	SW	PED 04B	PARALLEL	101	144	10			0.5	
N 8TH AVE E	NW	PED 05	FAN	136	244	32			1.0	
N 8TH AVE E	NE	PED 06	FAN	154	280	34			1.0	
N 8TH AVE E	SE	PED 07	DIAGONAL	102	211	22			1.0	STEEP SLOPE (EXCEEDS 8.3%) TO MATCH EXISTING GRADE
N 8TH AVE E	SW	PED 08	DIAGONAL	240	341	30			1.0	STEEP SLOPE (EXCEEDS 8.3%) TO MATCH EXISTING GRADE
N 9TH AVE E	NW	PED 09	DIAGONAL	229	290	16			1	STEEP SLOPE (EXCEEDS 8.3%) TO MATCH EXISTING GRADE
N 9TH AVE E	NE	PED 10	DEPRESSED CORNER	217	191	16			1	STEEP SLOPE (EXCEEDS 8.3%) TO MATCH EXISTING GRADE
N 9TH AVE E	SE	PED 11	DEPRESSED CORNER	121	118	20			1	
N 9TH AVE E	SW	PED 12	DEPRESSED CORNER	142	147	26			1	
N 10TH AVE E	NW	PED 13	DIAGONAL	166	236	12			1	
N 10TH AVE E	NE	PED 14	PARALLEL	132	166	12	22		1	
N 10TH AVE E	SE	PED 15	PARALLEL	124	146	14			1	
N 10TH AVE E	SW	PED 16	PARALLEL	134	162	16			1	
N 11TH AVE E	NW	PED 17	FAN	336	420	30			1	STEEP SLOPE (EXCEEDS 8.3%) TO MATCH EXISTING GRADE
N 11TH AVE E	NE	PED 18	FAN	258	631	32			1	STEEP SLOPE (EXCEEDS 8.3%) TO MATCH EXISTING GRADE
N 11TH AVE E	SE	PED 19	DIAGONAL	143	239	18			1	STEEP SLOPE (EXCEEDS 8.3%) TO MATCH EXISTING GRADE
N 11TH AVE E	SW	PED 20	DIAGONAL	148	222	16			1	STEEP SLOPE (EXCEEDS 8.3%) TO MATCH EXISTING GRADE

LHB PROJECT NO. 170650

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BRAD SCOTT
PRINTED NAME


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05/11/2018
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46198
LIC. NO.

E 9TH/8TH ST RECONDITIONING

CITY PROJECT NO. 1173

S.A.P. 118–134–017

CHARTS

SHEET NO. 5 OF 58 SHEETS

PLOT DATE: 5/14/2018 8:15:52 AM FILE: J:\7Pro\170650\600 Drawings\CV170650 03-CHARTS.dwg

A	ADA RAMPS									
CROSS STREET	QUADRANT	RAMP ID	RAMP DESIGN	SPEC. 2104	SPEC. 2521	SPEC. 2531	SPEC. 2531	SPEC. 2411	SPEC. 2575	REMARKS
				REMOVE SIDEWALK	CONCRETE WALK	TRUNCATED DOMES	CONCRETE CURB DESIGN V	CONCRETE RETAINING WALL, TYPE L	SITE RESTORATION	
				SQ FT	SQ FT	SQ FT	LIN FT	LIN FT	EACH	
N 12TH AVE E	NW	PED 21	FAN	172	262	14			1	
N 12TH AVE E	NE	PED 22	FAN	142	198	16			1	
N 12TH AVE E	SE	PED 23	DEPRESSED CORNER	106	123	14			1	
N 12TH AVE E	SW	PED 24	DEPRESSED CORNER	141	141	12			1	
N 13TH AVE E	NW	PED 25	FAN	195	253	14			1	
N 13TH AVE E	NE	PED 26	DEPRESSED CORNER	184	184	20			1	
N 13TH AVE E	SE	PED 27	DEPRESSED CORNER	100	162	12			1	
N 13TH AVE E	SW	PED 28	DEPRESSED CORNER	146	192	12			1	
N 14TH AVE E	NW	PED 29	FAN	161	243	12			1	
N 14TH AVE E	NE	PED 30	FAN	151	220	12			1	
N 14TH AVE E	SE	PED 31	DEPRESSED CORNER	138	145	16			1	
N 14TH AVE E	SW	PED 32	DEPRESSED CORNER	90	90	14			1	
E 8TH ST	SW	PED 33	FAN	171	242	12			1	STEEP SLOPE (EXCEEDS 8.3%) TO MATCH EXISTING GRADE
E 8TH ST	SE	PED 34	PERPENDICULAR	196	188	10			1	
N 15TH AVE E/CHESTER PARK DR	NW	PED 35	PARALLEL	105	115	12			1	
N 15TH AVE E/CHESTER PARK DR	NE	PED 36	ONE- WAY DIRECTIONAL	108	109	10			1	
N 15TH AVE E/CHESTER PARK DR	SE	PED 37	ONE- WAY DIRECTIONAL	152	133	10			1	
N 15TH AVE E/CHESTER PARK DR	SW	PED 38	PARALLEL	241	245	10			1	
N 16TH AVE E	NW	PED 39A	PERPENDICULAR	33	41	10			0.5	
N 16TH AVE E	NW	PED 39B	ONE-WAY DIRECTIONAL	33	41	10			0.5	
N 16TH AVE E	NE	PED 40	DEPRESSED CORNER	135	145	20			1	
N 16TH AVE E	SE	PED 41	PARALLEL	212	205	12			1	STEEP SLOPE (EXCEEDS 8.3%) TO MATCH EXISTING GRADE
N 16TH AVE E	SW	PED 42	PARALLEL	195	207	20			1	

LHB PROJECT NO. 170650

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CITY PROJECT NO. 1173

S.A.P. 118-134-017

CHARTS

SHEET NO. 6 OF 58 SHEETS

PLOT DATE: 5/14/2018 8:16:02 AM FILE: J:\7Pro\170650\600 Drawings\170650_03-CHARTS.dwg

A	ADA RAMPS									
CROSS STREET	QUADRANT	RAMP ID	RAMP DESIGN	SPEC. 2104	SPEC. 2521	SPEC. 2531	SPEC. 2531	SPEC. 2411	SPEC. 2575	REMARKS
				REMOVE SIDEWALK	CONCRETE WALK	TRUNCATED DOMES	CONCRETE CURB DESIGN V	CONCRETE RETAINING WALL, TYPE L	SITE RESTORATION	
				SQ FT	SQ FT	SQ FT	LIN FT	LIN FT	EACH	
GRAND VIEW AVE	NW	PED 43	PARALLEL	290	323	14			1	STEEP SLOPE (EXCEEDS 8.3%) TO MATCH EXISTING GRADE
GRAND VIEW AVE	NE	PED 44	PARALLEL	208	228	14			1	
N 17TH AVE E	NW	PED 45	ONE-WAY DIRECTIONAL	48	37	8			1	
N 17TH AVE E	NE	PED 46	PARALLEL	262	272	12			1	
N 17TH AVE E	SE	PED 47	PARALLEL	171	187	12			1	STEEP SLOPE (EXCEEDS 8.3%) TO MATCH EXISTING GRADE
N 17TH AVE E	SW	PED 48	PARALLEL	130	134	12			1	
N 18TH AVE E	NW	PED 49	PARALLEL	189	206	20			1	STEEP SLOPE (EXCEEDS 8.3%) TO MATCH EXISTING GRADE
N 18TH AVE E	SW	PED 50	DEPRESSED CORNER	174	158	22			1	
N 19TH AVE E	NW	PED 51	PARALLEL	181	199	12	14		1	STEEP SLOPE (EXCEEDS 8.3%) TO MATCH EXISTING GRADE
N 19TH AVE E	NE	PED 52	PARALLEL	178	198	14	15		1	STEEP SLOPE (EXCEEDS 8.3%) TO MATCH EXISTING GRADE
N 19TH AVE E	SE	PED 53	DIAGONAL	597	597	14	17	24	1	REMOVE 25 LF EXISTING TIMBER RETAINING WALL, STEEP SLOPE (EXCEEDS 8.3%) TO MATCH EXISTING GRADE
N 19TH AVE E	SW	PED 54	DIAGONAL	327	347	12			1	
N 20TH AVE E	NW	PED 55	DEPRESSED CORNER	77	84	24			1	
N 20TH AVE E	NE	PED 56	DIAGONAL	185	221	12			1	
N 20TH AVE E	SE	PED 57	PARALLEL	115	132	12			1	
N 20TH AVE E	SW	PED 58	PARALLEL	125	133	12			1	
GARDEN ST	NW	PED 59	PARALLEL	207	232	12			1	STEEP SLOPE (EXCEEDS 8.3%) TO MATCH EXISTING GRADE
GARDEN ST	NE	PED 60	DIAGONAL	305	320	10			1	STEEP SLOPE (EXCEEDS 8.3%) TO MATCH EXISTING GRADE
GARDEN ST	SE	PED 61	PARALLEL	279	287	12			1	
GARDEN ST	SW	PED 62	PARALLEL	199	208	12			1	
W KENT RD	NW	PED 63	DIAGONAL	187	204	10			1	
W KENT RD	NE	PED 64	PARALLEL	326	601	16			1	STEEP SLOPE (EXCEEDS 8.3%) TO MATCH EXISTING GRADE
TOTAL				11 441	13 973	1 006	68	24	64	

LHB PROJECT NO. 170650

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S.A.P. 118-134-017

CHARTS

SHEET NO. 7 OF 58 SHEETS

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CITY PROJECT NO. 1173

CHARTS

SHEET NO. 8 OF 58 SHEETS

PLOT DATE: 5/14/2018 8:16:22 AM FILE: J:\17Pro\170650\600 Drawings\CA\170650_03-CHARTS.dwg

B		DRIVEWAYS								
STATION	OFFSET	LT / RT	ADDRESS	SPEC. 2104	SPEC. 2104	SPEC. 2531	WIDTH AT STREET	WIDTH AT WALK	TAPER WIDTH	REPLACE (RESIDENTIAL)
				REMOVE CONCRETE DRIVEWAY PAVEMENT	SAWING CONCRETE PAVEMENT (FULL DEPTH)	7" CONCRETE DRIVEWAY PAVEMENT				
				SQ YD	LIN FT	SQ YD				
61+51.88	20.56	RT	1826 E 8TH ST	19.9	15	19.9	21	17	2	REPLACE
62+55.47	49.06	RT	1826 E 8TH ST	10.2	6	10.2	15	15	2	REPLACE
63+70.85	18.72	LT	802 N 19TH AVE E	10.5	25	10.5	16	12	2	REPLACE
63+80.56	20.73	RT	1902 E 8TH ST	13.3	30	13.3	17	13	2	REPLACE
64+31.09	20.65	RT	1902 E 8TH ST	LEAVE AS-IS						
66+19.96	20.36	RT	725 N 20TH AVE E	16.1	30	16.1	23	20	2	REPLACE
68+44.2	18.87	LT	804 N 20TH AVE E	30.2	20	3.0	42	38	2	REPLACE
69+08.3	18.99	LT	2011 E 8TH ST	2.8	14	2.8	16	14	2	REPLACE APRON, LEAVE WALK
70+60.74	19.73	LT	2021 E 8TH ST	LEAVE AS-IS						
77+13.85	22.00	LT	2119 E 8TH ST	10.0	21	10.0	16	12	2	REPLACE
77+69.96	19.15	LT	2119 E 8TH ST	7.8	30	REMOVE DRIVEWAY				
78+18.61	19.79	RT	715 WOODLAND AVE	10.6	10	10.6	16	12	2	REPLACE
78+79.67	19.86	RT	719 WOODLAND AVE	9.4	10	9.4	16	12	2	REPLACE
79+06.89	19.90	RT	723 WOODLAND AVE	12.9	28	12.9	20	18	2	REPLACE
79+87.46	20.00	LT	801 WOODLAND AVE	38.0	10	38.0	16	16	0	REPLACE
TOTALS				535	676	546				

C	CONCRETE ITEMS														
STATION	OFFSET	LT / RT	SPEC. 2104	SPEC. 2104	SPEC. 2104	SPEC. 2104	SPEC. 2301	SPEC. 2301	SPEC. 2301	SPEC. 2401	SPEC. 2521	SPEC. 2531	SPEC. 2531	SPEC. 2540	REMARKS
			REMOVE SIDEWALK	REMOVE CONCRETE PAVEMENT	SAWING CONCRETE PAVEMENT (FULL-DEPTH)	SALVAGE BRICK PAVERS	CONCRETE PAVEMENT (SPECIAL)	STRUCTURAL CONCRETE	DRILL AND GROUT REINF. BAR (EPOXY COATED)	REINF. BARS (EPOXY COATED)	4" CONCRETE WALK	CONCRETE CURB AND GUTTER B424 (MODIFIED)	CONCRETE CURB AND GUTTER B624	INSTALL BRICK PAVERS	
			SQ FT	SQ YD	LIN FT	SQ FT	SQ YD	CU YD	EACH	POUND	SQ FT	LIN FT	LIN FT	SQ FT	
2+13.14 TO 2+30.50	19.26' TO 19.32'	RT		8.3	25		3.6	1.0	5	5			16		
4+78.45 TO 4+93.52	15.78' TO 15.28'	RT		7.8	24		3.3	1.0	5	5			15		
5+16.21 TO 5+49.70	14.96' TO 42.27'	RT		27.5	62		11.8	2.0	18	18		53			
5+21.71 TO 5+47.51	20.79' TO 45.71'	LT		22.8	53		9.8	2.0	15	15		44			
5+84.08 TO 6+14.22	42.28' TO 20.61'	RT		22.3	52		9.6	2.0	14	14		43			
5+85.03 TO 6+16.49	45.71' TO 20.92'	LT		24.4	56		10.4	2.0	16	16		47			
6+73.17 TO 10+16.73	22.08' TO 49.19'	LT		193.5	382		82.9	17.0	124	124		43	330		
6+86.74 TO 7+24.74	20.61' TO 20.74'	RT		19.7	47		8.4	2.0	13	13			38		
7+95.84 TO 8+13.20	20.88' TO 20.92'	RT		8.3	25		3.6	1.0	5	5			16		

LHB PROJECT NO. 170650

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CITY PROJECT NO. 1173

S.A.P. 118-134-017

CHARTS

SHEET NO. 9 OF 58 SHEETS

Plot DATE: 5/14/2018 8:16:33 AM FILE: J:\17Pro\170650\600 Drawings\CV170650 03-CHARTS.dwg

C	CONCRETE ITEMS														
STATION	OFFSET	LT / RT	SPEC. 2104	SPEC. 2104	SPEC. 2104	SPEC. 2104	SPEC. 2301	SPEC. 2301	SPEC. 2301	SPEC. 2401	SPEC. 2521	SPEC. 2531	SPEC. 2531	SPEC. 2540	REMARKS
			REMOVE SIDEWALK	REMOVE CONCRETE PAVEMENT	SAWING CONCRETE PAVEMENT (FULL-DEPTH)	SALVAGE BRICK PAVERS	CONCRETE PAVEMENT (SPECIAL)	STRUCTURAL CONCRETE	DRILL AND GROUT REINF. BAR (EPOXY COATED)	REINF. BARS (EPOXY COATED)	4" CONCRETE WALK	CONCRETE CURB AND GUTTER B424 (MODIFIED)	CONCRETE CURB AND GUTTER B624	INSTALL BRICK PAVERS	
			SQ FT	SQ YD	LIN FT	SQ FT	SQ YD	CU YD	EACH	POUND	SQ FT	LIN FT	LIN FT	SQ FT	
7+30 TO 7+43	25.25' TO 29.25'	LT	48								48				
8+26.60 TO 8+42.60	20.96' TO 21.01'	RT		8.3	25		4	1.0	5	5			16		
8+84.03 TO 10+16.72	20.53' TO 49.17'	RT		84.6	172		36	8.0	54	54		43	120		
10+49.83 TO 11+10.38	49.20' TO 20.94'	RT		46.7	99		20	4.0	30	30		43	47		
10+50.50 TO 12+39.30	49.17' TO 20.64'	LT		113.6	228		49	10.0	73	73		43	176		
11+43.71 TO 11+59.71	21.02' TO 20.98'	RT		8.3	25		4	1.0	5	5			16		
11+57 TO 11+72	25.08' TO 30.08'	LT	75								75				
12+84.62 TO 13+04.21	20.54' TO 20.63'	LT		10.4	29		4	1.0	7	7			20		
12+87.03 TO 13+01.69	21.15' TO 21.22'	RT		7.8	24		3	1.0	5	5			15		
13+58.95 TO 13+94.95	21.30' TO 21.14'	RT		18.7	45		8	2.0	12	12			36		
14+31.30 TO 14+85.78	20.60' TO 54.39'	LT		41.5	89		18	4.0	27	27		80			
14+50.88 TO 14+86.38	21.26' TO 42.02'	RT		24.9	57		11	2.0	16	16		48			
15+14.61 TO 15+56.29	42.03' TO 21.64'	RT		28.0	63		12	3.0	18	18		54			
15+13.73 TO 19+56.83	54.38' TO 53.23'	LT		255.3	501		109	23.0	164	164		110	382		
15+86.61 TO 19+55.80	21.69' TO 40.89'	RT		197.2	389		84	18.0	127	127		51	329		
19+79.40 TO 20+13.85	40.89' TO 21.10'	RT		24.4	56		10	2.0	16	16		47			
19+77.94 TO 22+42.88	53.22' TO 20.78'	LT		148.9	296		64	13.0	96	96		57	230		
20+59.37 TO 20+75.37	21.09' TO 21.04'	RT		8.3	25		4	1.0	5	5			16		
22+15.16 TO 22+35.17	21.75' TO 21.46'	RT		10.4	29		4	1.0	7	7			20		
22+69.03 TO 22+90.28	21.52' TO 21.34'	RT		10.9	30		5	1.0	7	7			21		
22+97.69 TO 23+25.73	24.53' TO 21.55'	LT				88								88	
23+20.23 TO 23+37.58	21.36' TO 21.39'	RT		8.8	26		4	1.0	6	6			17		
23+09.95 TO 24+20.92	20.74' TO 64.15'	LT		80.9	165		35	7.0	52	52		59	97		
23+72.95 TO 24+20.31	21.45' TO 41.83'	RT		35.8	78		15	3.0	23	23		35	34		
24+47.25 TO 28+89.09	64.15' TO 51.05'	LT		264.1	518		113	24.0	170	170		99	410		
24+48.68 TO 24+90.82	41.83' TO 21.22'	RT		33.2	73		14	3.0	21	21		35	29		
25+45.76 TO 25+63.29	21.22' TO 21.22'	RT		8.3	25		4	1.0	5	5			16		
26+87.60 TO 27+07.60	21.18' TO 21.18'	RT		10.4	29		4	1.0	7	7			20		
27+72 TO 27+84	29.24' TO 25.24'	LT	48								48				
27+96.82 TO 28+12.82	21.22' TO 21.22'	RT		8.3	25		4	1.0	5	5			16		
28+30.84 TO 28+87.40	21.16' TO 36.54'	RT		34.2	75		15	3.0	22	22		26	40		
28+49 TO 28+69	30.12' TO 30.10'	RT	100								100				
28+55.92 TO 28+66.26	21.68' TO 24.61'	LT				30								30	
29+15.76 TO 29+56.44	36.56' TO 21.06'	RT		25.9	59		11	2.0	17	17		50			
29+13.91 TO 33+56.38	51.04' TO 40.41'	LT		251.1	493		108	22.0	161	161		119	365		
31+02.36 TO 33+56.38	21.36' TO 40.41'	RT		138.0	275		59	12.0	89	89		46	220		
33+80.67 TO 38+22.98	51.39' TO 49.84'	LT		252.2	495		108	23.0	162	162		118	368		
33+80.39 TO 38+20.90	40.42' TO 41.45'	RT		241.3	474		103	22.0	155	155		97	368		
36+53 TO 36+63	25.01' TO 30.01'	LT	50								50				
38+49.30 TO 38+79.84	41.48' TO 21.05'	RT		22.8	53		10	2.0	15	15		44			
38+46.41 TO 38+69.31	49.84' TO 20.61'	LT		22.8	53		10	2.0	15	15		44			
39+15.25 TO 39+68.48	20.88' TO 20.69'	RT		27.5	62		12	2.0	18	18			53		

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CITY PROJECT NO. 1173

S.A.P. 118-134-017

CHARTS

SHEET NO. 10 OF 58 SHEETS

Plot DATE: 5/14/2018 8:18:42 AM FILE: J:\7Pro\170650\600 Drawings\CV170650 03-CHARTS.dwg

C	CONCRETE ITEMS														
STATION	OFFSET	LT / RT	SPEC. 2104	SPEC. 2104	SPEC. 2104	SPEC. 2104	SPEC. 2301	SPEC. 2301	SPEC. 2301	SPEC. 2401	SPEC. 2521	SPEC. 2531	SPEC. 2531	SPEC. 2540	REMARKS
			REMOVE SIDEWALK	REMOVE CONCRETE PAVEMENT	SAWING CONCRETE PAVEMENT (FULL-DEPTH)	SALVAGE BRICK PAVERS	CONCRETE PAVEMENT (SPECIAL)	STRUCTURAL CONCRETE	DRILL AND GROUT REINF. BAR (EPOXY COATED)	REINF. BARS (EPOXY COATED)	4" CONCRETE WALK	CONCRETE CURB AND GUTTER B424 (MODIFIED)	CONCRETE CURB AND GUTTER B624	INSTALL BRICK PAVERS	
			SQ FT	SQ YD	LIN FT	SQ FT	SQ YD	CU YD	EACH	POUND	SQ FT	LIN FT	LIN FT	SQ FT	
39+34.08 TO 39+47.32	20.74' TO 20.76'	LT		6.7	22		3	1.0	4	4			13		
40+32.65 TO 41+24.26	19.26' TO 17.27'	LT		49.8	105		21	4.0	32	32			96		
40+36.50 TO 41+22.77	22.37' TO 58.15'	RT		59.2	123		25	5.0	38	38		51	63		
41+55.30 TO 42+47.86	68.14' TO 21.27'	RT		55.5	116		24	5.0	36	36		107			
42+23.60 TO 42+80.99	16.33' TO 16.23'	LT		30.1	67		13	3.0	19	19		58			
44+88.61 TO 45+19.78	20.37' TO 44.77'	RT		26.5	60		11	2.0	17	17		51			
45+49.24 TO 45+77.55	43.96' TO 20.85'	RT		24.4	56		10	2.0	16	16		47			
45+07.66 TO 45+74.79	16.85' TO 55.27'	LT		41.5	89		18	4.0	27	27		80			
46+01.70 TO 48+63.92	43.80' TO 30.77'	LT		150.0	298		64	13.0	96	96		89	200		
46+10.20 TO 46+19.28	20.31' TO 20.19'	RT		5.2	19		2		3	3			10		
47+26.68 TO 47+41.99	19.70' TO 19.69'	RT		8.3	25		4	1.0	5	5			16		
48+20.11 TO 48+59.86	19.58' TO 42.16'	RT		28.5	64		12	3.0	18	18		55			
48+83.20 TO 49+11.53	42.18' TO 19.68'	RT		21.8	51		9	2.0	14	14		42			
48+91.79 TO 49+27.39	58.61' TO 18.07'	LT		44.1	94		19	4.0	28	28		85			
49+96.22 TO 50+62.36	17.97' TO 68.36'	LT		47.7	101		20	4.0	31	31		92			
49+38.48 TO 49+54.48	19.67' TO 19.67'	RT		8.3	25		4	1.0	5	5			16		
49+97.40 TO 50+13.40	19.66' TO 19.66'	RT		8.3	25		4	1.0	5	5			16		
51+51.72 TO 51+70.52	19.60' TO 19.53'	RT		8.3	25		4	1.0	5	5			16		
52+06.92 TO 52+22.92	19.62' TO 19.62'	RT		8.3	25		4	1.0	5	5			16		
52+29.68 TO 52+61.50	19.58' TO 19.75'	RT		16.6	41		7	1.0	11	11			32		
52+92.10 TO 53+26.60	19.61' TO 41.17'	RT		24.9	57		11	2.0	16	16		48			
50+78.41 TO 52+97.03	57.82' TO 50.42'	LT		151.0	300		65	13.0	97	97		113	178		
53+18.86 TO 57+92.59	61.50' TO 46.32'	LT		269.3	528		115	24.0	173	173		126	393		
53+50.53 TO 53+78.31	41.18' TO 19.58'	RT		21.3	50		9	2.0	14	14		41			
54+16.70 TO 54+35.15	19.48' TO 19.47'	RT		9.3	27		4	1.0	6	6			18		
54+56.03 TO 54+72.07	19.46' TO 19.45'	RT		8.3	25		4	1.0	5	5			16		
54+82 TO 54+97	21.45' TO 26.45'	LT	75								75				
55+96 TO 56+36	20.50' TO 25.50'	LT	200								200				
55+38.23 TO 56+61.33	19.40' TO 19.34'	RT		63.8	132		27	6.0	41	41			123		
56+81.57 TO 57+92.22	19.37' TO 40.85'	RT		64.3	133		28	6.0	41	41		35	89		
58+15.90 TO 58+16.80	46.32' TO 33.59'	LT		6.7	22		3	1.0	4	4			13		
58+32.89 TO 60+26.31	18.74' TO 18.45'	LT		100.7	203		43	9.0	65	65		18	176		
61+30.16 TO 62+51.81	18.30' TO 44.38'	LT		72.1	148		31	6.0	46	46		41	98		
58+30.92 TO 58+50.56	20.31' TO 19.32'	RT		10.4	29		4	1.0	7	7		20			
59+21.27 TO 59+37.27	19.39' TO 19.40'	RT		8.3	25		4	1.0	5	5			16		
60+26.64 TO 60+93.19	20.12' TO 19.86'	RT		34.8	76		15	3.0	22	22			67		
61+25.74 TO 62+56.11	19.65' TO 56.47'	RT		82.5	168		35	7.0	53	53		56	103		
61+30 TO 61+72	18.30' TO 24.81'	LT	252								252				
62+88.16 TO 63+12.28	41.99' TO 18.38'	LT		22.3	52		10	2.0	14	14		43			
62+84.51 TO 63+34.91	56.47' TO 21.63'	RT		40.0	86		17	4.0	26	26		54	23		
63+75.04 TO 63+92.06	20.26' TO 20.20'	RT		8.3	25		4	1.0	5	5			16		
63+62.79 TO 63+78.79	18.35' TO 18.36'	LT		8.3	25		4	1.0	5	5			16		
64+89.77 TO 65+42.54	19.45' TO 19.55'	RT		27.5	62		12	2.0	18	18			53		

LHB PROJECT NO. 170650

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BRAD SCOTT
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E 9TH/8TH ST RECONDITIONING

CITY PROJECT NO. 1173

S.A.P. 118-134-017

CHARTS

SHEET NO. 11 OF 58 SHEETS

PLOT DATE: 5/14/2018 8:18:52 AM FILE: J:\7Pro\170650\600 Drawings\CV170650 03-CHARTS.dwg

C	CONCRETE ITEMS														
STATION	OFFSET	LT / RT	SPEC. 2104	SPEC. 2104	SPEC. 2104	SPEC. 2104	SPEC. 2301	SPEC. 2301	SPEC. 2301	SPEC. 2401	SPEC. 2521	SPEC. 2531	SPEC. 2531	SPEC. 2540	REMARKS
			REMOVE SIDEWALK	REMOVE CONCRETE PAVEMENT	SAWING CONCRETE PAVEMENT (FULL-DEPTH)	SALVAGE BRICK PAVERS	CONCRETE PAVEMENT (SPECIAL)	STRUCTURAL CONCRETE	DRILL AND GROUT REINF. BAR (EPOXY COATED)	REINF. BARS (EPOXY COATED)	4" CONCRETE WALK	CONCRETE CURB AND GUTTER B424 (MODIFIED)	CONCRETE CURB AND GUTTER B624	INSTALL BRICK PAVERS	
			SQ FT	SQ YD	LIN FT	SQ FT	SQ YD	CU YD	EACH	POUND	SQ FT	LIN FT	LIN FT	SQ FT	
65+81.23 TO 66+73.13	18.25' TO 18.40'	LT		47.7	101		20	4.0	31	31			92		
66+07.62 TO 66+30.31	19.36' TO 19.62'	RT		11.9	32		5	1.0	8	8			23		
66+64 TO 66+74	20.56' TO 25.56'	LT	50								50				
66+85.86 TO 67+25.81	19.70' TO 39.42'	RT		26.5	60		11	2.0	17	17		51			
66+96.60 TO 67+25.74	18.18' TO 45.04'	LT		25.9	59		11	2.0	17	17			50		
67+49.60 TO 73+72.15	39.41' TO 19.13'	RT		330.5	646		142	29.0	212	212		41	596		
67+49.34 TO 67+79.62	45.03' TO 18.09'	LT		26.5	60		11	2.0	17	17		51			
68+23.90 TO 68+66.53	18.12' TO 18.29'	LT		22.3	52		10	2.0	14	14			43		
69+02.13 TO 69+18.12	18.35' TO 18.38'	LT		8.3	25		4	1.0	5	5			16		
72+08.31 TO 74+11.79	18.89' TO 66.44'	LT		133.4	266		57	12.0	86	86		73	184		
74+50.78 TO 75+03.57	19.56' TO 52.91'	RT		38.4	83		16	3.0	25	25		74			
74+64.06 TO 75+19.99	43.67' TO 18.75'	LT		34.2	75		15	3.0	22	22		66			
75+53 TO 75+63	21.67' TO 26.67'	LT	50								50				
75+67.80 TO 80+39.51	71.30' TO 14.37'	RT		264.1	518		113	24.0	170	170		74	435		
76+92 TO 77+02	21.06' TO 26.06'	LT	50								50				
77+06.06 TO 77+91.14	18.78' TO 18.71'	LT		44.1	94		19	4.0	28	28			85		
78+23.58 TO 79+01.69	18.71' TO 48.80'	LT		51.9	109		22	5.0	33	33		46	54		
78+28 TO 78+38	21.38' TO 26.38'	LT	50								50				
79+25.04 TO 80+00.80	40.57' TO 21.35'	LT		54.0	113		23	5.0	35	35		104			
TOTALS			1 048	5 317	11 057	118	2 277	477	3 415	3 422	1 048	3 280	6 967	118	

LHB PROJECT NO. 170650

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CITY PROJECT NO. 1173

S.A.P. 118-134-017

CHARTS

SHEET NO. 12 OF 58 SHEETS

PLOT DATE: 5/14/2018 8:17:02 AM FILE: J:\17Pro\170650\600 Drawings\CV170650 03-CHARTS.dwg

D	CONCRETE PAVEMENT ITEMS											
STATION	OFFSET	LT / RT	SPEC. 2104	SPEC. 2105	SPEC. 2211	SPEC. 2301	SPEC. 2301	SPEC. 2301	SPEC. 2301	SPEC. 2302	SPEC. 2401	REMARKS
			REMOVE CONCRETE PAVEMENT	SELECT GRANULAR BORROW MOD 7% (CV)	AGGREGATE BASE (CV) CLASS 5	CONCRETE PAVEMENT 8.0"	SUPPLEMENTAL PAVEMENT REINFORCEMENT	STRUCTURAL CONCRETE	DOWEL BAR	FULL DEPTH REPAIR (TYPE CD–HV)	REINF. BARS (EPOXY COATED)	
			SQ YD	CU YD	CU YD	SQ YD	POUND	CU YD	EACH	LIN FT	POUND	
19+65.04 TO 19+90.29	9.66' – 19.64'	RT								63		
34+27.36 TO 37+28.36	10.58' – 18.92'	RT								687		
61+25.77 TO 61+34.89	16.29' – 17.72'	LT/RT								77		
62+28.15 TO 63+12.31	44.38/56.47'	LT/RT	574	210	105	574	1 492	128	232		805	
66+63.44 TO 66+73.01	12.4' – 16.37'	LT/RT								10		
79+13.08 TO 79+37.51	4.11' – 17.25'	RT								79		
TOTALS			574	210	105	574	1 492	128	232	916	805	

E	BITUMINOUS SURFACING					
STATION	OFFSET	LT / RT	SPEC. 2123	SPEC. 2232	SPEC. 2360	REMARKS
			STREET SWEEPER (WITH PICKUP BROOM)	MILL BITUMINOUS SURFACE (3.0")	TYPE SP 9.5 WEARING COURSE MIXTURE (3,B)	
			HOUR	SQ YD	TON	
1+66.05 TO 62+28.15			8	28 110	5 060	
63+12.31 TO 80+34.13			2	7 690	1 384	
TOTALS			10	35 800	6 444	

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CITY PROJECT NO. 1173

S.A.P. 118–134–017

CHARTS

SHEET NO. 13 OF 58 SHEETS

Plot DATE: 5/14/2018 8:17:12 AM FILE: J:\7Pro\170650\600 Drawings\CHARTS.dwg

F	ADJUST STRUCTURES											
STATION	OFFSET	LT / RT	SPEC. 2504	SPEC. 2104	SPEC. 2104	SPEC. 2504	SPEC. 2504	SPEC. 2506	SPEC. 2506	SPEC. 2506	SPEC. 2540	REMARKS
			CONCRETE ENCASED VALVE BOX COVER IN ROADWAY	REMOVE HYDRANT	REMOVE CASTING	HYDRANT ASSEMBLY	ADJUST CURB STOP	ADJUST FRAME AND RING CASTING	CASTING ASSEMBLY	CONCRETE ENCASED CASTING COLLAR	ADJUST MONUMENT BOX	
			EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	
2+50.73	15.39	RT	1									GAS VALVE
5+33.70	8.99	RT	1									WATER VALVE
5+66.22	14.31	LT								1		SANITARY MANHOLE
5+74.94	31.30	LT	1									WATER VALVE
5+77.03	28.57	RT	1									WATER VALVE
5+78.01	23.75	RT	1									WATER VALVE
5+78.74	27.25	RT	1									WATER VALVE
5+85.02	15.47	RT								1		STORM MANHOLE
5+91.16	13.25	RT	1									WATER VALVE
7+13.22	15.51	RT								1		STORM MANHOLE
9+75.75	14.70	LT								1		SANITARY MANHOLE
10+04.00	24.00	RT									1	⑥ MONUMENT
10+04.94	8.67	RT	1									WATER VALVE
10+23.20	19.41	LT								1		SANITARY MANHOLE
10+26.76	14.89	RT								1		STORM MANHOLE
10+44.92	21.78	RT	1									WATER VALVE
10+62.46	12.51	RT	1									WATER VALVE
10+65.07	17.08	RT								1		WATER MANHOLE
14+69.17	7.08	RT	1									WATER VALVE
14+94.60	29.24	LT								1		STORM MANHOLE
14+94.83	1.42	RT								1		STORM MANHOLE
15+01.49	18.31	LT								1		SANITARY MANHOLE
15+09.61	32.16	LT	1									WATER VALVE
15+10.80	19.53	RT	1									WATER VALVE
15+30.97	8.96	RT	1									WATER VALVE
16+64.00	23.00	RT					1					CURB STOP
17+13.00	23.00	RT					2					CURB STOP
17+44.00	23.00	RT					1					CURB STOP
17+87.00	23.00	RT					1					CURB STOP
19+29.88	15.44	RT								1		WATER MANHOLE (FIELD VERIFY)
19+36.00	8.18	RT	1									WATER VALVE
19+42.80	24.06	RT									1	⑥ MONUMENT
19+55.21	18.74	RT	1									WATER VALVE
19+55.25	21.80	RT								1		WATER MANHOLE
19+61.86	0.12	RT								1		STORM MANHOLE
19+67.71	17.79	LT								1		SANITARY MANHOLE
19+86.83	32.71	LT								1		STORM MANHOLE
19+97.42	8.45	RT	1									WATER VALVE
20+00.54	13.54	RT	1									WATER VALVE

⑥ CALL NATHAN LAVINE AT (218) 348-8814 FOR CASTING LOCATIONS.

LHB PROJECT NO. 170650

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S.A.P. 118-134-017

CHARTS

SHEET NO. 14 OF 58 SHEETS

Plot DATE: 5/14/2018 8:17:22 AM FILE: J:\17Pro\170650\600 Drawings\170650_03-CHARTS.dwg

F	ADJUST STRUCTURES											
STATION	OFFSET	LT / RT	SPEC. 2504	SPEC. 2104	SPEC. 2104	SPEC. 2504	SPEC. 2504	SPEC. 2506	SPEC. 2506	SPEC. 2506	SPEC. 2540	REMARKS
			CONCRETE ENCASED VALVE BOX COVER IN ROADWAY	REMOVE HYDRANT	REMOVE CASTING	HYDRANT ASSEMBLY	ADJUST CURB STOP	ADJUST FRAME AND RING CASTING	CASTING ASSEMBLY	CONCRETE ENCASED CASTING COLLAR	ADJUST MONUMENT BOX	
			EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	
22+77.00	23.00	RT					1					CURB STOP
24+03.58	8.68	RT	1									WATER VALVE
24+15.76	18.15	LT								1		SANITARY MANHOLE
24+28.22	0.43	RT								1		STORM MANHOLE
24+28.48	45.37	LT								1		STORM MANHOLE
24+34.36	18.04	LT								1		SANITARY MANHOLE
24+34.40	42.13	LT								1		SANITARY MANHOLE
24+44.27	33.88	LT	1									WATER VALVE
24+69.08	5.69	RT	1									WATER VALVE
24+72.50	21.47	RT			1				1			CB0520182 (STRM-1)
24+72.62	20.99	LT			1				1			CB0520183 (STRM-1)
28+57.00	23.00	RT					1					CURB STOP
28+78.89	23.54	RT									1	⑥ MONUMENT
28+95.70	0.05	RT								1		STORM MANHOLE
29+00.36	18.13	LT								1		SANITARY MANHOLE
29+36.83	12.86	RT	1									WATER VALVE
29+37.14	16.36	RT								1		WATER MANHOLE
29+44.65	17.45	RT	1									WATER VALVE
33+33.72	12.16	RT	1									WATER VALVE
33+62.01	0.13	RT								1		STORM MANHOLE
33+66.33	17.97	LT								1		SANITARY MANHOLE
34+02.74	8.34	RT	1									WATER VALVE
34+06.09	19.15	RT	1									WATER VALVE
34+06.18	13.12	RT	1									WATER VALVE
35+27.38	18.84	LT								1		SANITARY MANHOLE
35+82.53	0.19	LT								1		STORM MANHOLE
38+28.63	0.21	RT								1		STORM MANHOLE
38+35.28	19.04	LT								1		SANITARY MANHOLE
38+68.21	15.24	RT								1		WATER MANHOLE
38+74.67	16.76	RT	1									WATER VALVE
39+27.18	11.13	RT								1		STORM MANHOLE
39+46.88	6.28	RT	1									WATER VALVE
39+54.94	19.05	LT								1		SANITARY MANHOLE
41+13.99	4.65	RT								1		STORM MANHOLE
45+12.44	21.32	RT						1				STORM CATCH BASIN
45+13.40	16.94	LT						1				STORM CATCH BASIN
45+65.78	19.95	RT						1				STORM CATCH BASIN
46+00.26	41.46	LT						1				STORM CATCH BASIN
46+05.50	7.70	LT								1		STORM MANHOLE
46+68.27	15.28	RT								1		STORM MANHOLE

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CITY PROJECT NO. 1173

S.A.P. 118-134-017

CHARTS

SHEET NO. 15 OF 58 SHEETS

Plot DATE: 5/14/2018 8:17:33 AM FILE: J:\17Pro\170650\600 Drawings\CV170650 03-CHARTS.dwg

F	ADJUST STRUCTURES											
STATION	OFFSET	LT / RT	SPEC. 2504	SPEC. 2104	SPEC. 2104	SPEC. 2504	SPEC. 2504	SPEC. 2506	SPEC. 2506	SPEC. 2506	SPEC. 2540	REMARKS
			CONCRETE ENCASED VALVE BOX COVER IN ROADWAY	REMOVE HYDRANT	REMOVE CASTING	HYDRANT ASSEMBLY	ADJUST CURB STOP	ADJUST FRAME AND RING CASTING	CASTING ASSEMBLY	CONCRETE ENCASED CASTING COLLAR	ADJUST MONUMENT BOX	
			EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	
48+06.59	15.12	LT								1		STORM MANHOLE
48+73.41	19.28	LT								1		SANITARY MANHOLE
48+78.74	14.64	LT								1		STORM MANHOLE
48+78.88	12.99	RT								1		WATER MANHOLE
48+87.50	21.41	LT	1									WATER VALVE
48+92.41	19.77	LT		1								REMOVE HYDRANT
48+93.46	21.76	LT				1						HYDRANT ASSEMBLY
50+48.58	15.83	LT								1		STORM MANHOLE
51+59.00	26.00	LT					1					CURB STOP
52+92.53	19.87	LT								1		SANITARY MANHOLE
53+00.58	16.49	LT								1		STORM MANHOLE
53+08.15	8.88	RT	1									WATER VALVE
53+24.83	10.29	RT	1									WATER VALVE
57+29.76	20.58	LT								1		SANITARY MANHOLE
57+70.34	10.02	RT	1									WATER VALVE
57+90.60	22.15	RT								1		STORM MANHOLE
57+94.18	29.07	LT								1		STORM MANHOLE
57+98.17	17.25	LT								1		SANITARY MANHOLE
58+15.40	16.74	RT	1									WATER VALVE
58+38.33	8.50	RT	1									WATER VALVE
60+83.88	15.69	LT								1		SANITARY MANHOLE
62+64.22	1.01	RT								1		STORM MANHOLE
62+69.36	17.16	LT								1		SANITARY MANHOLE
63+00.71	20.19	LT	1									WATER VALVE
63+01.81	31.00	RT	1									GAS VALVE
63+29.00	20.00	RT					1					CURB STOP
66+70.00	23.00	LT					1					CURB STOP
67+12.85	23.01	RT	1									WATER VALVE
67+30.04	0.64	RT								1		STORM MANHOLE
67+52.44	35.00	LT								1		STORM MANHOLE
67+64.66	17.07	LT								1		SANITARY MANHOLE
67+69.54	14.36	RT	1									WATER VALVE
67+70.39	8.32	RT	1									WATER VALVE
72+23.01	17.62	LT								1		SANITARY MANHOLE
74+37.92	32.82	LT								1		STORM MANHOLE
74+47.38	33.13	LT	1									WATER VALVE
74+65.23	11.92	RT	1									WATER VALVE
74+67.67	6.82	RT	1									WATER VALVE
75+02.49	17.40	LT								1		SANITARY MANHOLE

LHB PROJECT NO. 170650

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S.A.P. 118-134-017

CHARTS

SHEET NO. 16 OF 58 SHEETS

PLOT DATE: 5/14/2018 8:17:42 AM FILE: J:\7Pro\170650\600 Drawings\CHARTS.dwg

F	ADJUST STRUCTURES											
STATION	OFFSET	LT / RT	SPEC. 2504	SPEC. 2104	SPEC. 2104	SPEC. 2504	SPEC. 2504	SPEC. 2506	SPEC. 2506	SPEC. 2506	SPEC. 2540	REMARKS
			CONCRETE ENCASED VALVE BOX COVER IN ROADWAY	REMOVE HYDRANT	REMOVE CASTING	HYDRANT ASSEMBLY	ADJUST CURB STOP	ADJUST FRAME AND RING CASTING	CASTING ASSEMBLY	CONCRETE ENCASED CASTING COLLAR	ADJUST MONUMENT BOX	
			EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	
75+25.19	19.27	RT								1		STORM MANHOLE
76+71.14	5.59	RT	1									GAS VALVE
78+57.11	17.02	LT								1		SANITARY MANHOLE
79+10.99	7.15	RT	1									GAS VALVE
79+19.38	8.56	RT	1									WATER VALVE
79+23.47	14.03	RT	1									WATER VALVE
79+23.91	39.35	LT								1		SANITARY MANHOLE
79+27.14	5.59	RT								1		SANITARY MANHOLE
79+84.64	0.25	LT								1		STORM MANHOLE
79+87.46	24.92	LT								1		STORM MANHOLE
79+94.20	0.34	RT	1									WATER VALVE
79+95.48	2.25	RT	1									WATER VALVE
TOTALS			49	1	2	1	10	4	2	61	3	

LHB PROJECT NO. 170650

PLOT DATE: 5/14/2018 8:17:52 AM FILE: J:\7Pro\170650\600 Drawings\CHARTS.dwg

G		CATCH BASIN REPLACEMENT														
LOCATION	STATION	OFFSET	RT/LT	CITY CATCH BASIN NUMBER	SPEC. 2104	SPEC. 2104	SPEC. 2104	SPEC. 2211	SPEC. 2302	SPEC. 2301	SPEC. 2301	SPEC. 2503	SPEC. 2506	SPEC. 2506	STRUCTURE DEPTH	STORM CASTING TYPE
					SAWING CONCRETE PAVEMENT (FULL DEPTH)	REMOVE CONCRETE PAVEMENT	REMOVE CATCH BASIN	AGGREGATE BASE (CV) CLASS 5	DRILL AND GROUT REINFORCEMENT BARS (EPOXY COATED)	CONCRETE PAVEMENT (SPECIAL)	STRUCTURAL CONCRETE	12" RC PIPE SEWER DES 3006 CL III	CONSTRUCT DRAINAGE STRUCTURE DESIGN G	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL		
					①	①			①	①	①	③	②④	②④		
					LIN FT	SQ YD	EACH	CU YD	EACH	SQ YD	CU YD	LIN FT	EACH	EACH	LIN FT	
7TH AVE E	5+26.18	14.94	RT	CB0520137	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3
7TH AVE E	5+32.31	21.04	LT	CB0520136	4	2.1	1	1.2	2	2.1	0.4		1		3.0	STRM-3
7TH AVE E	5+47.61	34.64	LT	CB0520135	4	2.1	1	1.2	2	2.1	0.4		1		3.5	STRM-3
7TH AVE E	5+84.95	42.54	LT	CB0520134	4	2.1	1	1.2	2	2.1	0.4		1		3.5	STRM-3
7TH AVE E	6+06.62	20.74	RT	CB0520132	4	2.1	1	1.2	2	2.1	0.4		1		4.7	STRM-3
7TH AVE E	6+06.92	20.91	LT	CB0520133	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3
8TH AVE E	10+17.94	46.96	LT	CB0520139	4	2.1	1	1.2	2	2.1	0.4		1		3.0	STRM-3
8TH AVE E	10+49.66	46.51	LT	CB0520138	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3
9TH AVE E	14+66.12	21.28	RT	CB0520154	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3
9TH AVE E	14+66.46	20.82	LT	CB0520155	4	2.1	1	1.2	2	2.1	0.4		1		3.5	STRM-3
9TH AVE E	14+85.85	44.34	LT	CB0520152	4	2.1	1	1.2	2	2.1	0.4		1		5.0	STRM-3
9TH AVE E	15+13.62	43.65	LT	CB0520153	4	2.1	1	1.2	2	2.1	0.4		1		5.5	STRM-3
10TH AVE E	19+32.94	21.26	RT	CB0520170	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3
10TH AVE E	19+33.46	20.91	LT	CB0520171	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3
10TH AVE E	19+56.77	43.23	LT	CB0520169	4	2.1	1	1.2	2	2.1	0.4			1	4.0	SPECIAL
10TH AVE E	19+78.43	39.50	LT	CB0520168	4	2.1	1	1.2	2	2.1	0.4		1		3.5	STRM-3
10TH AVE E	20+05.79	21.34	RT	CB0520166	4	2.1	1	1.2	2	2.1	0.4		1		3.0	STRM-3
10TH AVE E	20+05.91	20.83	LT	CB0520167	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3
11TH AVE E	24+20.73	58.96	LT	CB0520184	4	2.1	1	1.2	2	2.1	0.4		1		6.5	STRM-3
11TH AVE E	24+47.34	59.14	LT	CB0520185	4	2.1	1	1.2	2	2.1	0.4		1		5.0	STRM-3
11TH AVE E	24+80.43	19.80	LT		4	2.1		1.2	2	2.1	0.4	8	1		3.5	STRM-3
11TH AVE E	24+81.35	20.55	RT		4	2.1		1.2	2	2.1	0.4	10	1		4.0	STRM-3
12TH AVE E	28+89.26	42.94	LT	CB0520212	4	2.1	1	1.2	2	2.1	0.4			1	3.5	SPECIAL
12TH AVE E	29+13.83	42.25	LT	CB0520213	4	2.1	1	1.2	2	2.1	0.4		1		3.5	STRM-3
12TH AVE E	29+38.16	21.31	RT	CB0520210	4	2.1	1	1.2	2	2.1	0.4		1		3.5	STRM-3
12TH AVE E	29+38.19	20.75	LT	CB0520211	4	2.1	1	1.2	2	2.1	0.4		1		4.5	STRM-3
13TH AVE E	33+55.64	41.78	LT	CB0520229	4	2.1	1	1.2	2	2.1	0.4			1	4.0	SPECIAL
13TH AVE E	34+02.14	21.33	LT	CB0520228	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3
14TH AVE E	38+00.14	20.83	RT	CB0520235	4	2.1	1	1.2	2	2.1	0.4		1		3.5	STRM-3
14TH AVE E	38+00.26	21.16	LT	CB0520236	4	2.1	1	1.2	2	2.1	0.4		1		3.5	STRM-3
14TH AVE E	38+22.52	36.16	LT	CB0520233	4	2.1	1	1.2	2	2.1	0.4		1		3.5	STRM-3
14TH AVE E	38+46.19	34.28	LT	CB0520234	4	2.1	1	1.2	2	2.1	0.4		1		3.0	STRM-3
8TH ST	41+08.81	22.91	RT	CB0520237	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3
8TH ST	41+09.56	17.48	LT	CB0520238	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3
8TH ST	42+30.26	16.24	LT	CB0520245	4	2.1	1	1.2	2	2.1	0.4		1		4.5	STRM-3
8TH ST	42+43.69	21.14	RT	CB0520246	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3

- ① THE QUANTITY SHOWN IS THE AMOUNT REQUIRED TO COMPLETE THE CATCH BASIN REPLACEMENT WORK AS SHOWN ON SHEET 36 THAT IS IN ADDITION TO THE WORK REQUIRED TO COMPLETE THE CURB AND GUTTER REPLACEMENT AS SHOWN IN THE TYPICAL SECTION, SHEET 35, AND TABULATED IN CHART C.
- ② CONTRACTOR SHALL POUR FRESH CONCRETE AND FORM STRUCTURE INSIDE BOTTOM ELEVATION TO MATCH THE ELEVATION OF THE LOWEST PIPE INVERT ELEVATION (INCIDENTAL)
- ③ CONSTRUCT STORM SEWER AT 1.0% MIN.
- ④ CASTING ASSEMBLIES FOR STRUCTURES PAID FOR BY THE EACH ARE INCIDENTAL.
- ⑤ CATCHBASINS WERE FILLED WITH SEDIMENT OR OTHERWISE INACCESSIBLE AT THE TIME OF SURVEY. FIELD VERIFY DEPTH.

LHB PROJECT NO. 170650

I HEREBY CERTIFY that this plan, specification or report 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.

BRAD SCOTT
PRINTED NAME


SIGNATURE

05/11/2018
DATE
46198
LIC. NO.

E 9TH/8TH ST RECONDITIONING

CITY PROJECT NO. 1173

S.A.P. 118-134-017

CHARTS

SHEET NO. 18 OF 58 SHEETS

PLOT DATE: 5/14/2018 8:18:03 AM FILE: J:\17Pro\170650\600 Drawings\G\170650_03-CHARTS.dwg

G	CATCH BASIN REPLACEMENT															
LOCATION	STATION	OFFSET	RT/LT	CITY CATCH BASIN NUMBER	SPEC. 2104	SPEC. 2104	SPEC. 2104	SPEC. 2211	SPEC. 2302	SPEC. 2301	SPEC. 2301	SPEC. 2503	SPEC. 2506	SPEC. 2506	STRUCTURE DEPTH	STORM CASTING TYPE
					SAWING CONCRETE PAVEMENT (FULL DEPTH)	REMOVE CONCRETE PAVEMENT	REMOVE CATCH BASIN	AGGREGATE BASE (CV) CLASS 5	DRILL AND GROUT REINFORCEMENT BARS (EPOXY COATED)	CONCRETE PAVEMENT (SPECIAL)	STRUCTURAL CONCRETE	12" RC PIPE SEWER DES 3006 CL III	CONSTRUCT DRAINAGE STRUCTURE DESIGN G	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL		
					①	①			①	①	①	③	②④	②④		
					LIN FT	SQ YD	EACH	CU YD	EACH	SQ YD	CU YD	LIN FT	EACH	EACH	LIN FT	
15TH AVE E	46+14.77	19.63	RT	CB0530118	4	2.1	1	1.2	2	2.1	0.4		1		4.5	STRM-3
15TH AVE E	46+14.91	17.71	LT	CB0530035	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3
16TH AVE E	48+94.74	18.56	LT	CB0530036	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3
16TH AVE E	49+05.50	19.53	RT	CB0530185	4	2.1	1	1.2	2	2.1	0.4		1		4.5	STRM-3
GRAND VIEW	50+37.58	30.52	LT	CB0530039	4	2.1	1	1.2	2	2.1	0.4			1	⑤	SPECIAL
GRAND VIEW	50+74.50	51.76	LT	CB0530038	4	2.1	1	1.2	2	2.1	0.4		1		3.0	STRM-3
GRAND VIEW	50+90.98	18.11	LT	CB0530037	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3
17TH AVE E	52+97.79	49.04	LT	CB0530191	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3
17TH AVE E	53+34.17	31.09	LT	CB0530040	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3
17TH AVE E	53+55.25	18.43	LT	CB0530186	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3
17TH AVE E	53+72.44	19.73	RT	CB0530187	4	2.1	1	1.2	2	2.1	0.4			1	4.5	SPECIAL
18TH AVE E	57+92.50	41.43	LT	CB0530062	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3
18TH AVE E	58+15.99	39.66	LT	CB0530061	4	2.1	1	1.2	2	2.1	0.4		1		3.0	STRM-3
18TH AVE E	58+37.09	19.54	RT	CB0530059	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3
18TH AVE E	58+39.12	18.37	LT	CB0530060	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3
19TH AVE E	62+51.94	36.36	LT	ST0530049	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3
19TH AVE E	62+88.12	42.33	LT	CB0530156	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3
19TH AVE E	63+06.26	21.37	RT	CB0530069	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3
19TH AVE E	63+07.21	20.35	LT	CB0530068	4	2.1	1	1.2	2	2.1	0.4		1		4.5	STRM-3
20TH AVE E	67+25.64	40.16	LT	CB0530085	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3
20TH AVE E	67+49.33	40.16	LT	CB0530171	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3
20TH AVE E	67+73.74	18.31	LT	CB0530084	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3
GARDEN ST	73+96.44	18.42	LT	CB0530192	4	2.1	1	1.2	2	2.1	0.4		1		⑤	STRM-3
GARDEN ST	74+15.87	61.55	LT	UNKNOWN	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3
GARDEN ST	74+71.09	19.54	RT	CB0530093	4	2.1	1	1.2	2	2.1	0.4		1		3.5	STRM-3
GARDEN ST	74+71.38	35.78	LT	CB0530092	4	2.1	1	1.2	2	2.1	0.4		1		4.0	STRM-3
MID BLOCK	77+42.67	18.97	LT	CB0530161	4	2.1	1	1.2	2	2.1	0.4		1		⑤	STRM-3
W KENT RD	79+02.44	41.78	LT	ST0530112	4	2.1	1	1.2	2	2.1	0.4		1		4.5	STRM-3
W KENT RD	79+25.70	31.94	LT	CB0530152	4	2.1	1	1.2	2	2.1	0.4		1		5.0	STRM-3
END OF PROJECT	79+70.06	18.63	RT	CB0530182	4	2.1	1	1.2	2	2.1	0.4		1		⑤	STRM-3
	80+35.08	14.40	RT	CB0530114	4	2.1	1	1.2	2	2.1	0.4			1	⑤	SPECIAL
TOTALS					268	140.7	65	80.4	134	140.7	26.8	18	61	6		

- ① THE QUANTITY SHOWN IS THE AMOUNT REQUIRED TO COMPLETE THE CATCH BASIN REPLACEMENT WORK AS SHOWN ON SHEET 36 THAT IS IN ADDITION TO THE WORK REQUIRED TO COMPLETE THE CURB AND GUTTER REPLACEMENT AS SHOWN IN THE TYPICAL SECTION, SHEET 35, AND TABULATED IN CHART C.
- ② CONTRACTOR SHALL POUR FRESH CONCRETE AND FORM STRUCTURE INSIDE BOTTOM ELEVATION TO MATCH THE ELEVATION OF THE LOWEST PIPE INVERT ELEVATION (INCIDENTAL)
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H	CASTING ASSEMBLIES ④					
	STRM-1		STRM-3		SPECIAL	
CASTING	STORM MH		STORM CB		STORM CB	
TYPE OF ASSEMBLY	FRAME		GRATE		FRAME	GRATE
CASTING DESCRIPTION	STRM-1		STRM-3		NA	
DULUTH PLATE NUMBER	NA		NA		SEE SHEET 34	
PLAN DETAIL	NA		NA		NA	
GRATE TYPE	NA		NA		NA	L
HEIGHT IN FEET	0.67'		0.74'		0.33'	NA
PROJECT TOTAL	2		61		6	

LHB PROJECT NO. 170650

I HEREBY CERTIFY that this plan, specification or report 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.

BRAD SCOTT
PRINTED NAME


SIGNATURE

05/11/2018
DATE
46198
LIC. NO.

E 9TH/8TH ST RECONDITIONING

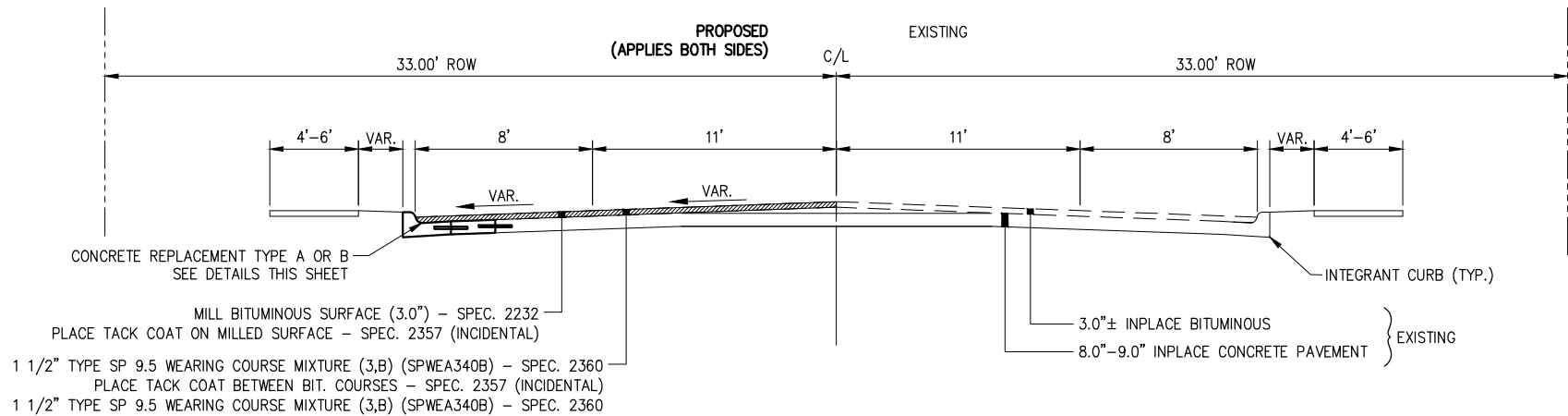
CITY PROJECT NO. 1173

S.A.P. 118-134-017

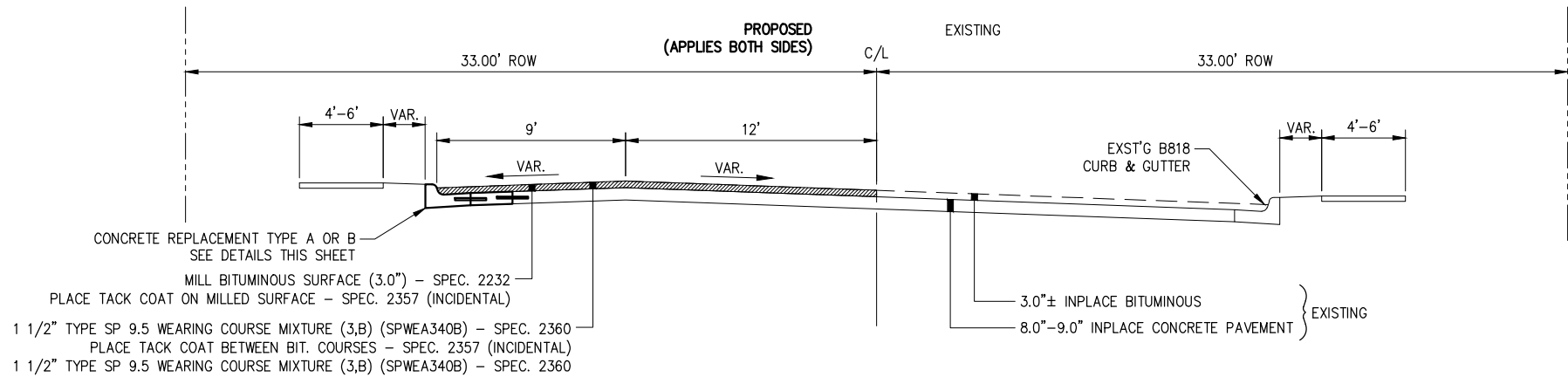
CHARTS

SHEET NO. 19 OF 58 SHEETS

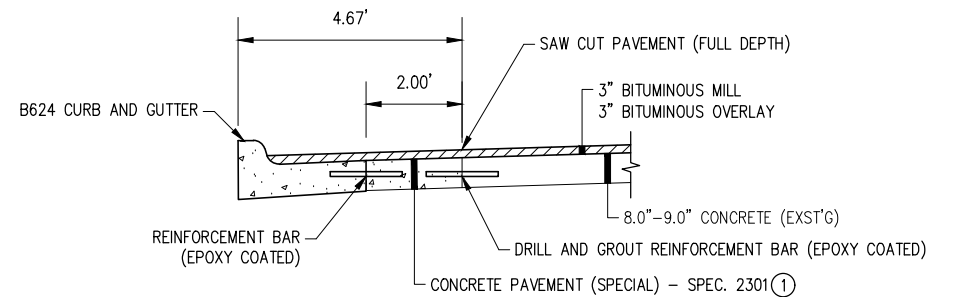
Plot DATE: 5/14/2018 8:18:14 AM FILE: J:\7Pro\170650\600 Drawings\170650\04-Typical Sections.dwg



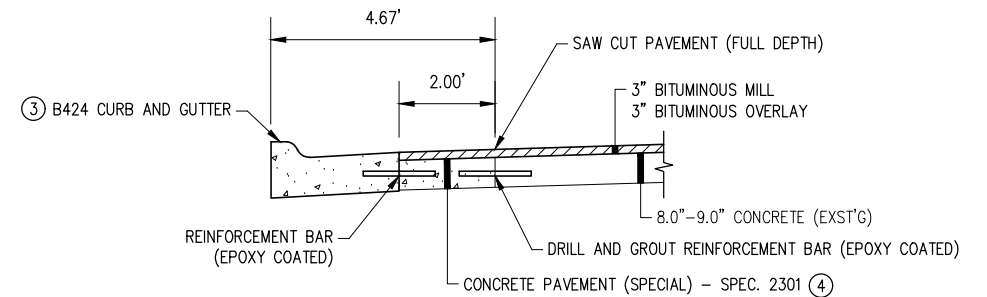
TYPICAL SECTION - E 8TH ST ②
APPLIES: STA 41+60.00 TO STA 62+28.24
STA 63+12.30 TO STA 80+38.30
(E 8TH ST TO WOODLAND AVE)



TYPICAL SECTION - E 9TH ST
APPLIES: STA 1+66.05 TO STA 41+60.00
(6TH AVE E TO E 8TH ST)



CURB REPLACEMENT TYPE A
APPLIES: CURB REHABILITATION AREAS ① ⑤



CURB REPLACEMENT TYPE B
APPLIES: AT ADA CURB RAMP RETROFITS
(INTERSECTIONS) AND AVENUES ④ ⑤

KEY NOTES

- ① SELECTIVE CURB AND GUTTER REPLACEMENT AS SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. PROVIDE ADDITIONAL CLASS 5 FOR SHIMMING AND COMPACT (INCIDENTAL).
- ② STA 62+28.24 TO STA 63+12.30 REFER TO CONCRETE INTERSECTION DETAIL FOR N 19TH AVE E.
- ③ AT CURB RAMP RETROFITS CURB HEIGHT SHALL BE ADJUSTED TO MATCH INPLACE CURB HEIGHT (3" HEIGHT APPROX.).
- ④ PROVIDE ADDITIONAL CLASS 5 FOR SHIMMING AND COMPACT (INCIDENTAL).
- ⑤ SEE ADDITIONAL REQUIREMENTS ON SHEET 35.

LHB PROJECT NO. 170650

I HEREBY CERTIFY that this plan, specification or report 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.

BRAD SCOTT
PRINTED NAME

Brad Scott
SIGNATURE

05/11/2018
DATE
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LIC. NO.

E 9TH/8TH ST RECONDITIONING

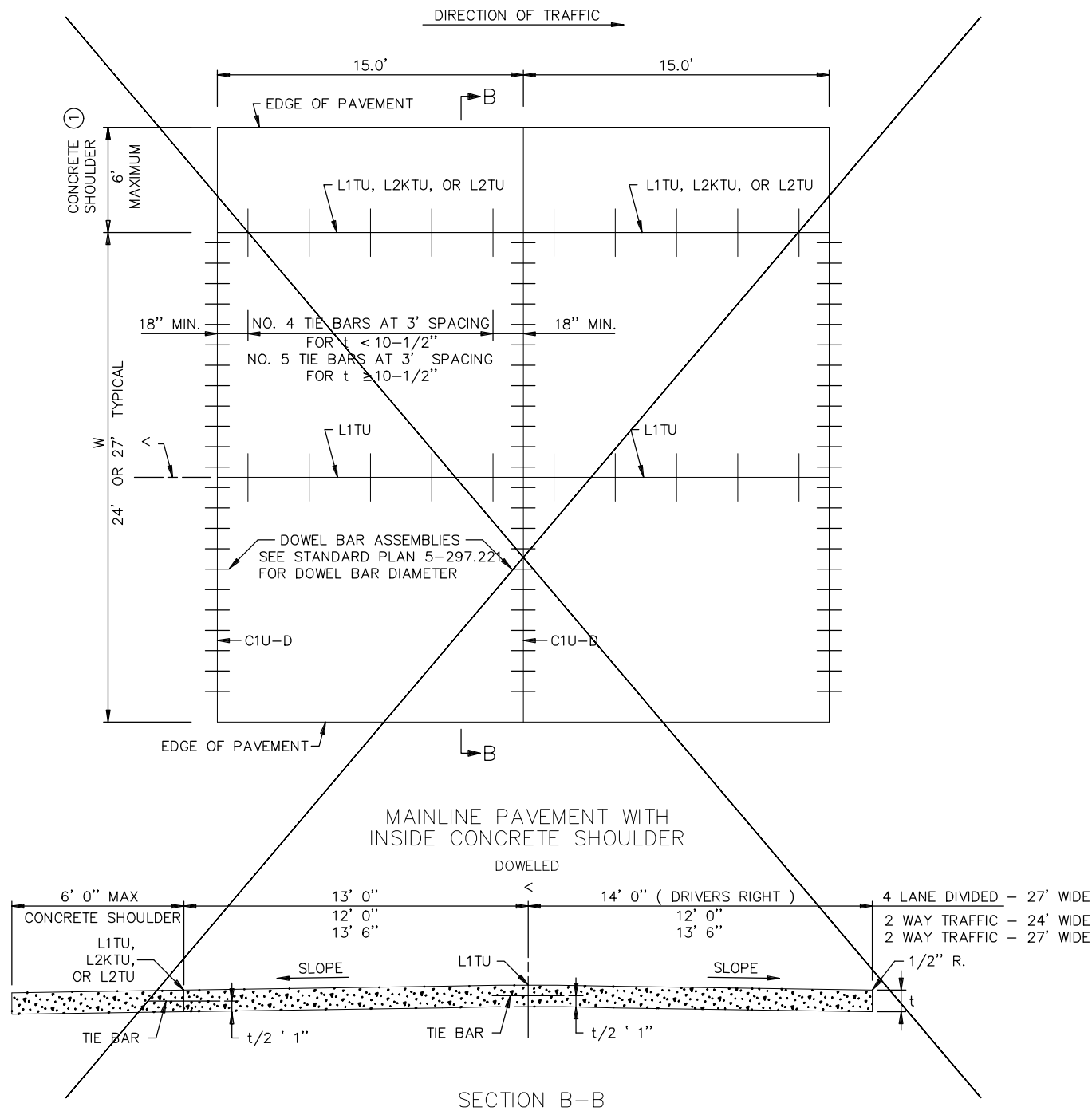
CITY PROJECT NO. 0855TR

S.P. 118-134-017

TYPICAL SECTIONS

SHEET NO. 20 OF 58 SHEETS

PLOT DATE: 5/14/2018 8:18:26 AM FILE: J:\17Pro\170650\600 Drawings\170650_CSA-Standard Plans.dwg



GENERAL NOTES:

SEE TYPICAL SECTIONS AND PLAN SHEETS FOR CROSS SLOPES AND PAVEMENT THICKNESS, t .

DOWEL BAR ASSEMBLIES, WHEN REQUIRED, SHALL BE SIMILAR TO THOSE SHOWN ON STANDARD PLATE 1103.

ALL REINFORCING BARS SHALL BE EPOXY COATED AND COMPLY WITH SPEC. 3301.

FOR SUPPLEMENTAL PAVEMENT REINFORCEMENT, SEE STANDARD PLATE 1070.

① CONTACT THE CONCRETE ENGINEER TO DISCUSS WHETHER TIE BARS AND SAWED JOINTS ARE NEEDED BASED ON CONCRETE SHOULDER WIDTH AND DEPTH.

REVISION:
APPROVED: FEBRUARY 16, 2016
DIRECTOR, OFFICE OF MATERIALS AND ROAD RESEARCH

LHB PROJECT NO. 170650

* DENOTES MODIFICATION TO STANDARD PLAN

I HEREBY CERTIFY that this plan, specification or report 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.

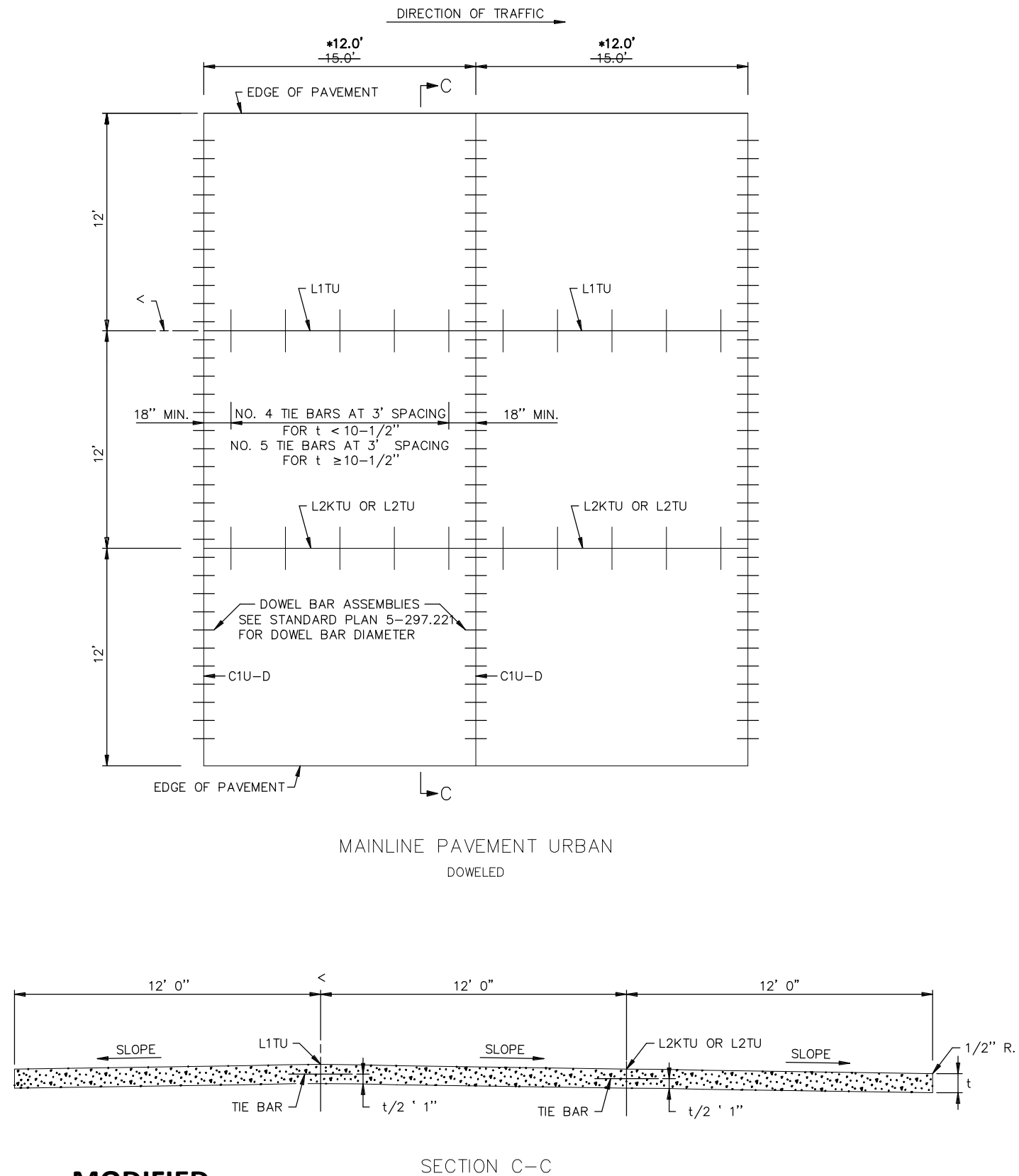
BRAD SCOTT
PRINTED NAME

BRAD SCOTT
SIGNATURE

05/11/2018
DATE
46198
LIC. NO.

E 9TH/8TH ST RECONDITIONING

CITY PROJECT NO. 0855TR



MODIFIED

SECTION C-C

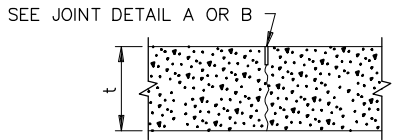
MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED:	CONCRETE MAINLINE PAVEMENT 15.0 FT. PANEL LENGTH URBAN OR CONCRETE SHOULDERS
	APPROVED:	
2-16-2016		STANDARD PLAN 5-297.217
STATE DESIGN ENGINEER		2 OF 2

S.P. 118-134-017

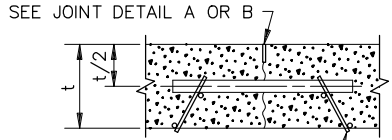
CONSTRUCTION DETAILS

SHEET NO. 21 OF 58 SHEETS

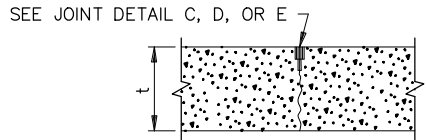
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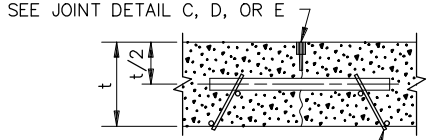
C1U & C2H



C1U-D & C2H-D



C3P, C4S, C5H



C3P-D, C4S-D, C5H-D

CONTRACTION JOINT
REFERENCE, DETAIL
& SEALER SPEC. TABLE

JOINT REFERENCE		JOINT DETAIL	JOINT SEALER SPEC.	JOINT WIDTH
WITHOUT DOWELS	WITH DOWELS			
C1U	C1U-D	A	UNSEALED	1/8"
C2H	C2H-D	B	3725	1/8"
C3P	C3P-D	C	3721	3/8"
C4S	C4S-D	D	3722	3/8"
C5H	C5H-D	E	3725	3/8"

LEGEND
C = CONTRACTION JOINT
NO. = JOINT REFERENCE
U = UNSEALED
H = HOT POURED
P = PREFORMED
S = SILICONE
-D = DOWEL BARS

EXAMPLE
C2H-D

DOWEL BAR DIAMETER TABLE

PAVEMENT THICKNESS t	DOWEL BAR DIAMETER
LESS THAN 6"	NONE
6" - 6 1/2"	1" OR NONE
7" - 7 1/2"	1"
8" - 10"	1 1/4"
10 1/2" AND GREATER	1 1/2"

NOTES:

SEE STANDARD PLATE 1103 FOR DOWEL BAR ASSEMBLY.

SEE STANDARD PLATE 1150 FOR CONSTRUCTION OF
HEADER JOINTS.

JOINT WIDTH TOLERANCE IS + 1/16" TO - 1/32"

FURNISH AND INSTALL ALL JOINT SEALER IN ACCORDANCE
WITH THE MANUFACTURER'S RECOMMENDATIONS.

SEE STANDARD PLANS 5-297.217 AND 5-297.219,
FOR CONCRETE MAINLINE/RAMP PAVEMENT.

SEE PAVING LAYOUTS IN THE PLANS FOR JOINT
CLASS DESIGNATION TO BE USED AND SPECIAL
REINFORCEMENT REQUIRED.

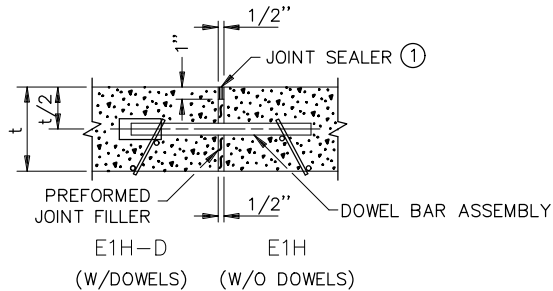
- JOINT DEPTH SHALL BE:
FOR CONCRETE OVERLAYS - 1/3 THE PAVEMENT THICKNESS
FOR CONCRETE PAVEMENT - 1/4 THE PAVEMENT THICKNESS
- SEE CONTRACTION JOINT SEALER DETAIL.
WHEN USING PREFORMED JOINT SEALER, THE DEPTH
SHALL BE 1/4" MORE THAN THE PREFORMED SEALER,
WHEN COMPRESSED, TO FIT THE JOINT DESIGN WIDTH.
"a" DIMENSION SHALL APPLY AT ANY POINT THROUGHOUT
"c" DEPTH. SHARP INTERNAL CORNERS WILL NOT BE
PERMITTED. ALL CORNERS SHALL BE PROVIDED WITH
SUITABLE FILLET.
- WHEN SEALING, THE JOINT FACES SHALL BE CLEANED
AND DRIED BY SANDBLASTING AND AIR BLASTING.
- PRIOR TO SEALING THE JOINT, A 1/2" DIA. CLOSED
CELL BACKER ROD SHALL BE PLACED SUCH THAT THE
TOP OF THE BACKER ROD IS 1/2" BELOW THE SURFACE
OF THE PAVEMENT. NON SELF-LEVELING SILICONE
SHALL BE TOOLED INTO THE JOINT MAINTAINING A SEAL
AND BEAD THICKNESS OF 1/4".
- PRIOR TO SEALING THE JOINT, A 1/2" DIA. CLOSED
CELL BACKER ROD CAPABLE OF WITHSTANDING
SEALANT TEMPERATURES OF 400 DEGREES F. SHALL
BE PLACED 1/2" BELOW THE TOP OF PAVEMENT.

EXPANSION JOINT
REFERENCE, DETAIL
& SEALER SPEC. TABLE

JOINT REFERENCE		JOINT DETAIL	JOINT SEALER SPEC.	JOINT WIDTH
WITHOUT DOWELS	WITH DOWELS			
E1H	E1H-D	A	3725	1/2"
E2H	E2H-D	B	3725	1"
E4H		C	3725	2"
	E4H-D	D	3725	2"
E8H		STANDARD PLAN 5- 297.229	3725	4"

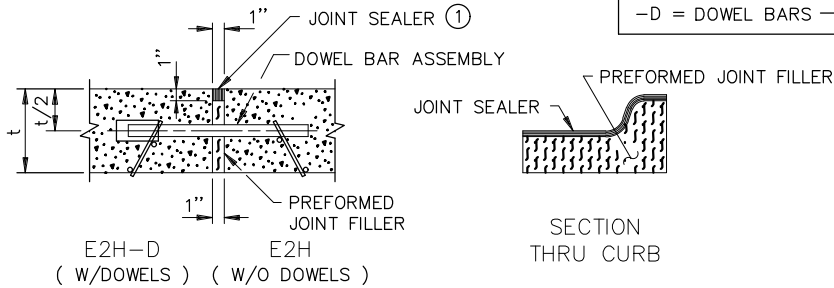
LEGEND
E = EXPANSION JOINT
NO. = JOINT REFERENCE
H = HOT POURED
-D = DOWEL BARS

EXAMPLE
E4H-D



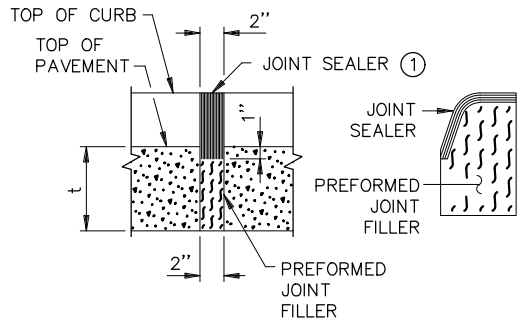
E1H-D (W/DOWELS) E1H (W/O DOWELS)

JOINT DETAIL A



E2H-D (W/DOWELS) E2H (W/O DOWELS)

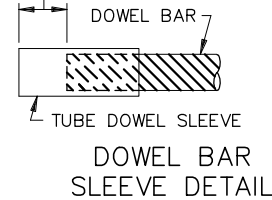
JOINT DETAIL B



E4H (W/O DOWELS)

JOINT DETAIL C

SPACE FROM END OF DOWEL BAR
TO END OF SLEEVE TO BE EQUAL
TO EXPANSION JOINT WIDTH (1" MIN.)



DOWEL BAR
SLEEVE DETAIL

NOTES:

PREFORMED JOINT FILLER MATERIAL, SPEC. 3702.

FOR DOWEL BAR ASSEMBLY, SEE STANDARD PLATE 1103.

- JOINT SEALER SPEC. 3725. THE JOINT FACES SHALL
BE CLEANED AND DRIED BY SANDBLASTING AND AIR
BLASTING. TOP OF SEALER, FLUSH TO 1/8" BELOW TOP
OF PAVEMENT SURFACE. MAKE TOP OF SEALER FOR
CURB SECTION D JOINTS FLUSH WITH SURFACE 1/8".

REVISION:
APPROVED: 8-6-2014
DIRECTOR, OFFICE OF MATERIALS AND ROAD RESEARCH
LHB PROJECT NO. 170650

CONTRACTION JOINTS
DESIGN C



STATE DESIGN ENGINEER

REVISED:

APPROVED:

8-6-2014

PAVEMENT JOINTS
CONTRACTION (DESIGN C) AND EXPANSION (DESIGN E)

STANDARD PLAN 5-297.221 1 OF 2

E 9TH/8TH ST RECONDITIONING

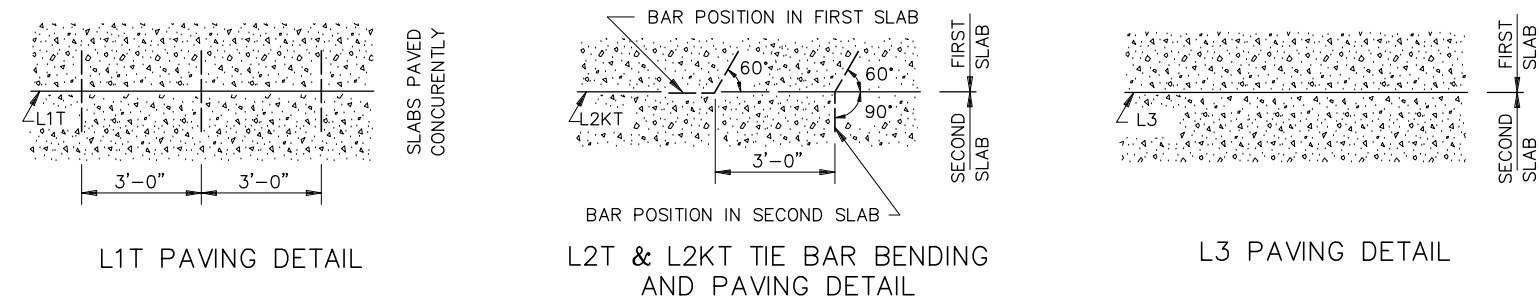
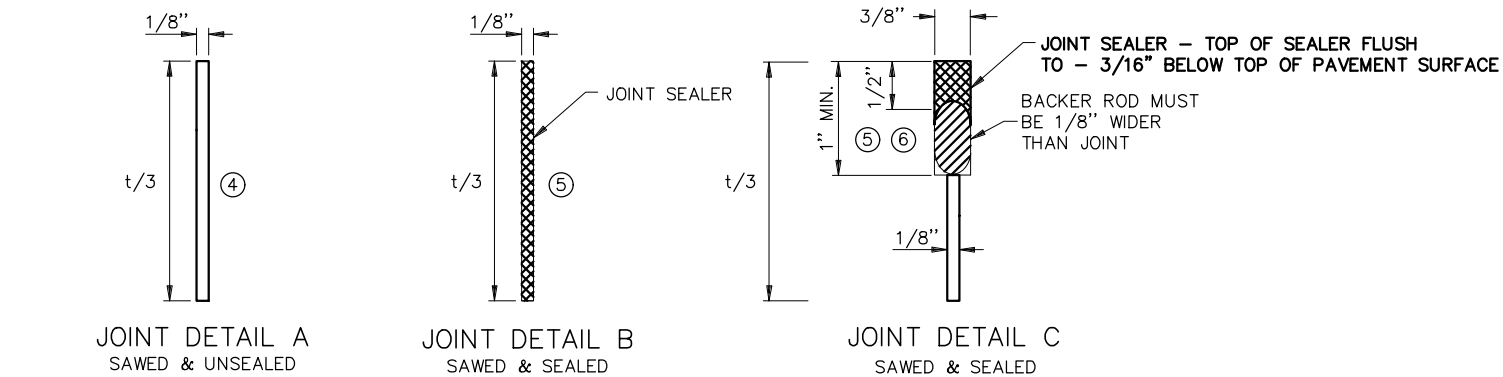
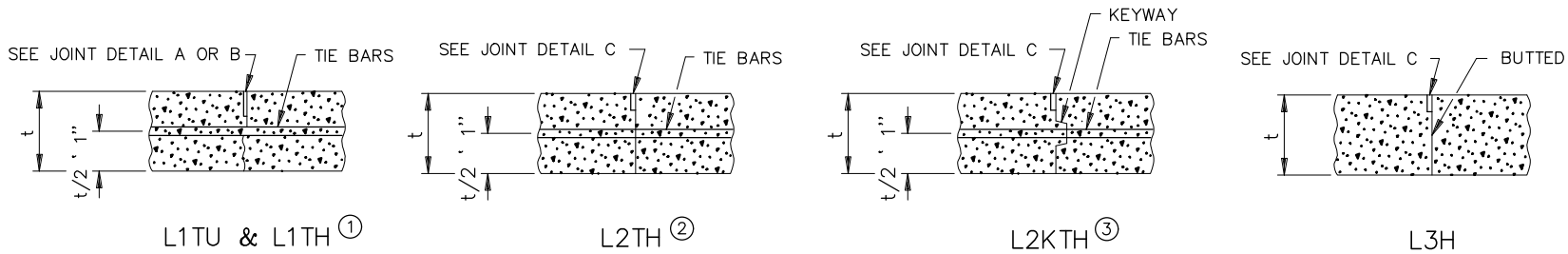
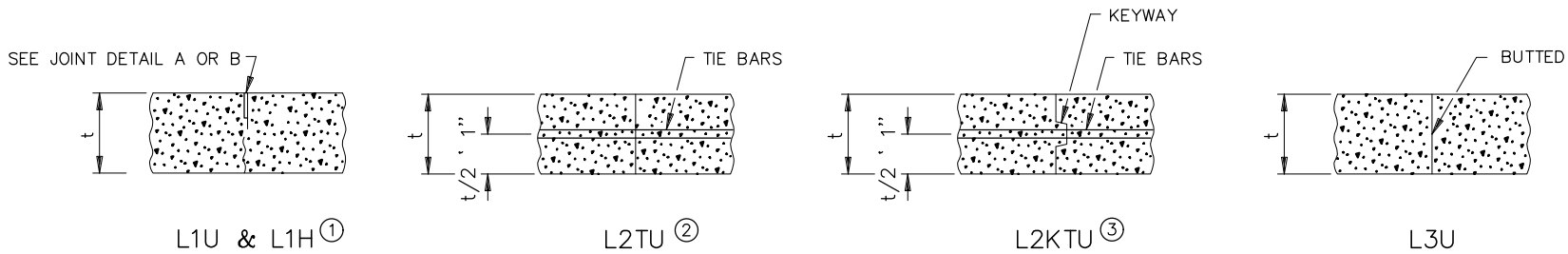
CITY PROJECT NO. 0855TR

S.P. 118-134-017

CONSTRUCTION DETAILS

SHEET NO. 22 OF 58 SHEETS

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TIEBAR TABLE

PAVEMENT THICKNESS	TIEBAR SIZE	LENGTH
<10-1/2"	NO. 4	30"
≥10-1/2"	NO. 5	36"
ALL THICKNESS WHEN TYING TO CURB AND GUTTER	NO. 4	30"

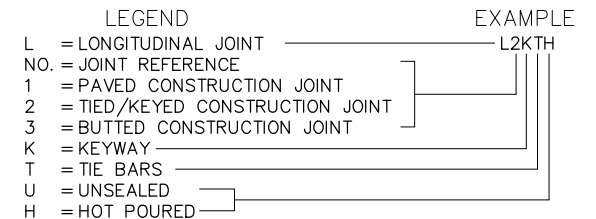
THE TIE BAR SPACING FOR ALL L2T AND L2KT JOINTS SHALL BE 3'-0" CENTER TO CENTER AND BENT 60° AS SHOWN, EXCEPT WHEN NOTED OTHERWISE IN THE PLANS.

TIE BARS IN THE L2T AND L2KT JOINTS SHALL BE THE SAME SIZE AND LENGTH AS USED FOR THE L1T JOINTS, WHEN TYING PAVEMENT TO PAVEMENT. TIE BARS IN THE L2KT JOINTS SHALL BE NO. 4 X 2' - 6", WHEN TYING CURB & GUTTER TO PAVEMENT.

ALL TIE BARS SHALL BE EPOXY COATED AND COMPLY WITH SPEC. 3301.

LONGITUDINAL JOINT REFERENCE, DETAIL & SEALER SPECIFICATION TABLE

JOINT REFERENCE			JOINT DETAIL	JOINT SEALER SPEC	JOINT WIDTH
WITHOUT TIE BARS	WITH TIE BARS	WITH KEYWAY & TIE BARS			
L1U	L1TU		A	UNSEALED	1/8"
L1H	L1TH		B	3725	1/8"
	L2TU	L2KTU	NONE	UNSEALED	
	L2TH	L2KTH	C	3725	3/8"
L3U			NONE	UNSEALED	
L3H			C	3725	3/8"



NOTES:

NORMALLY, TIED PAVEMENT WIDTHS SHALL NOT EXCEED FOUR LANES, EXCEPT BRIDGE APPROACH PANELS AND PAVEMENT TAPERS.

JOINT WIDTH TOLERANCE IS + 1/16 IN. TO - 1/32 IN.

FURNISH AND INSTALL ALL JOINT SEALER IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

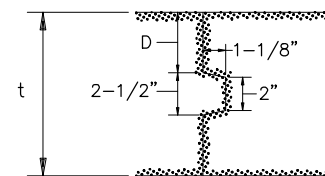
TIED/KEYED AND BUTTED CONSTRUCTION JOINTS SHALL BE UNSEALED EXCEPT AS OTHERWISE NOTED IN THE PLAN OR REQUIRED BY THE ENGINEER.

SEE STANDARD PLANS 5-297.217 AND 5-297.219 FOR CONCRETE MAINLINE AND RAMP PAVEMENT.

SEE PAVING LAYOUTS IN THE PLANS FOR JOINT CLASS DESIGNATIONS TO BE USED AND SPECIAL REINFORCEMENT REQUIRED.

WHEN CURB AND GUTTER IS PLACED ADJACENT TO CONCRETE MAINLINE, THE TIEBARS SHALL BE PLACED A MINIMUM OF 2" ABOVE THE CURB AND GUTTER GRADE.

- ① SEE THE LONGITUDINAL JOINT REFERENCE, DETAIL & SEALER SPECIFICATION TABLE TO DETERMINE JOINT DETAIL.
- ② CONCRETE PAVEMENTS LESS THAN 7" SHALL USE L2TU AND L2TH JOINTS UNLESS OTHERWISE ALLOWED BY THE ENGINEER.
- ③ CONCRETE PAVEMENTS GREATER THAN OR EQUAL TO 7" SHALL USE L2KTU AND L2KTH JOINTS UNLESS OTHERWISE ALLOWED BY THE ENGINEER.
- ④ THE JOINT FACES SHALL BE CLEANED WITH WATER DURING THE SAW CUTTING OPERATION OR BY WATER BLASTING AFTER SAWING.
- ⑤ THE JOINT FACES SHALL BE CLEANED AND DRIED BY SANDBLASTING AND AIR BLASTING.
- ⑥ PRIOR TO SEALING THE JOINT, A 1/2" DIAMETER CLOSED CELL BACKER ROD CAPABLE OF WITHSTANDING SEALANT TEMPERATURES OF 400 DEGREES F. SHALL BE PLACED 1/2" BELOW THE TOP OF THE PAVEMENT.



PAVEMENT KEYWAY DETAIL

KEYWAY DIMENSION TABLE

t PAVEMENT THICKNESS	D (TOLERANCE ± 1/4")
< 7"	NO KEYWAY
7" TO 7-1/2"	3"
8" TO 10"	4"
≥ 10-1/2"	5"

KEYWAY (1-1/8" x 2" x 2-1/2") MAY BE FORMED WITH MOLD OR METAL FORM. OTHER APPROVED KEYWAY SHAPES GIVING EQUIVALENT CONSTRUCTION FEATURES MAY BE USED WITH APPROVAL OF THE ENGINEER.

REVISION:

APPROVED: 8-6-2014

DIRECTOR, OFFICE OF MATERIALS AND ROAD RESEARCH

LHB PROJECT NO. 170650

MINNESOTA
DEPARTMENT OF TRANSPORTATION

REVISD:

APPROVED: 8-6-2014

STATE DESIGN ENGINEER

PAVEMENT JOINTS
LONGITUDINAL (DESIGN L)

STANDARD PLAN 5-297.221 2 OF 2

E 9TH/8TH ST RECONDITIONING

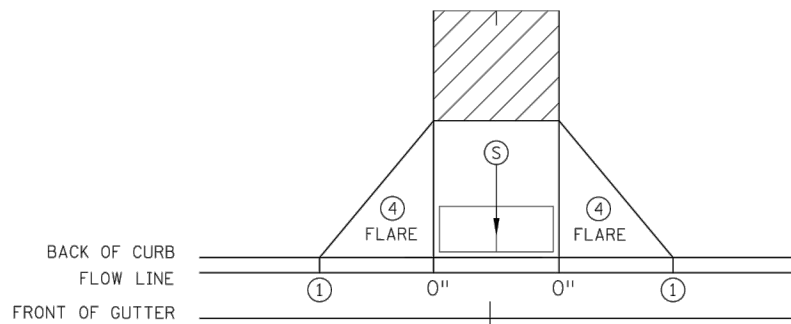
CITY PROJECT NO. 0855TR

S.P. 118-134-017

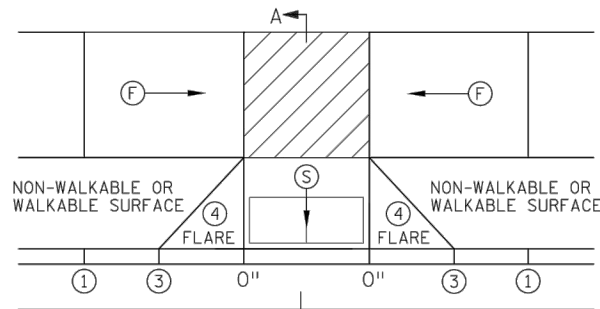
CONSTRUCTION DETAILS

SHEET NO. 23 OF 58 SHEETS

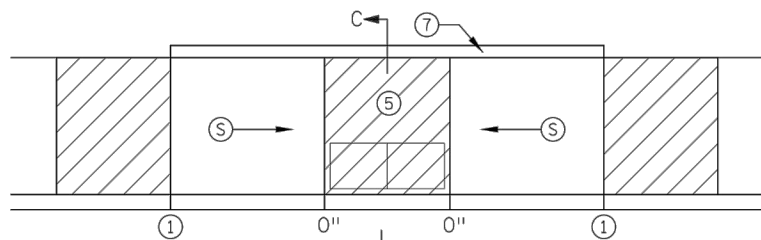
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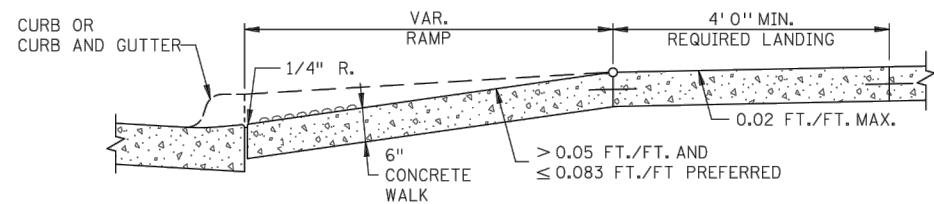
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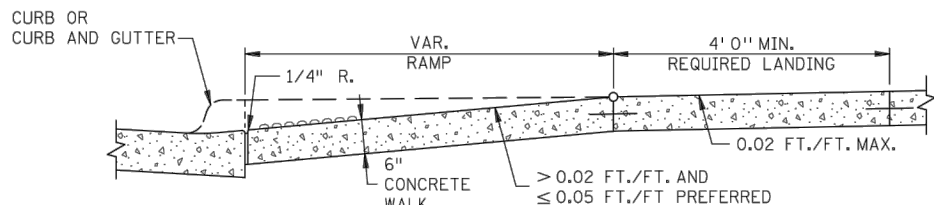
TIERED PERPENDICULAR



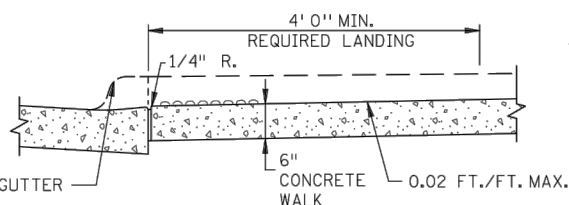
PARALLEL



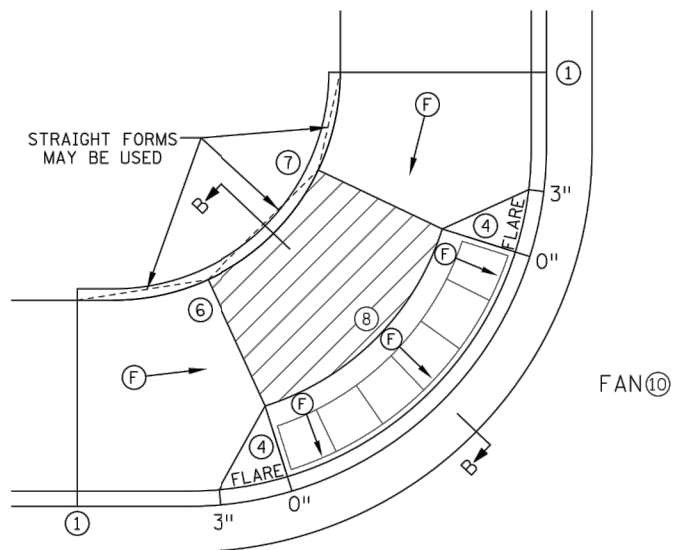
SECTION A-A
PERPENDICULAR/TIERED/DIAGONAL



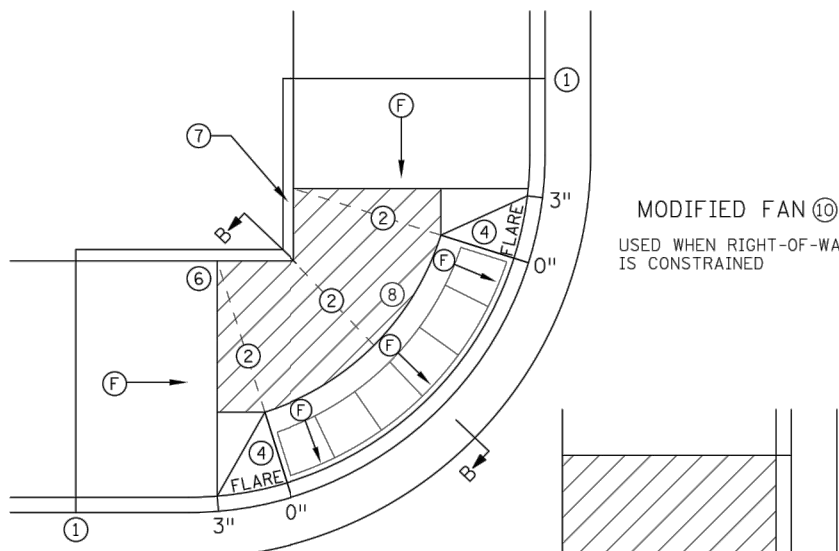
SECTION B-B
FAN



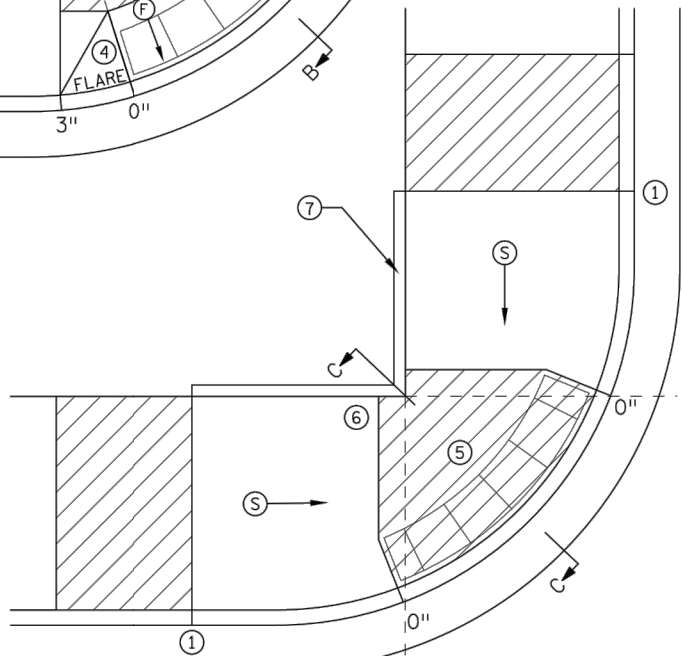
SECTION C-C
PARALLEL/DEPRESSED CORNER



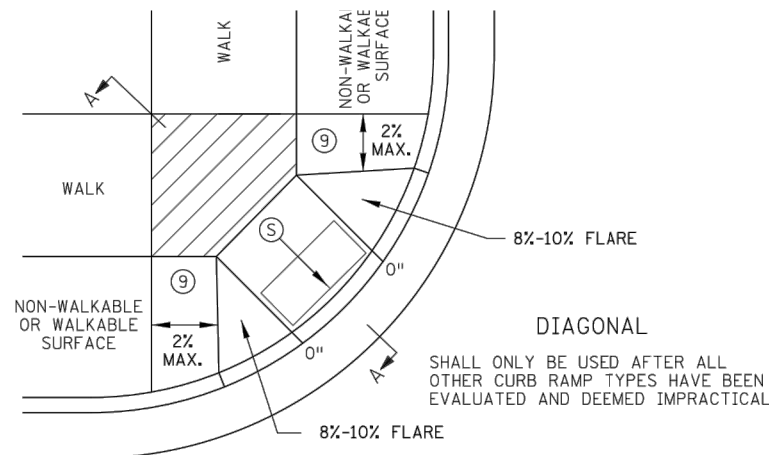
FAN ⑩



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



DEPRESSED CORNER



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

NOTES:

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

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

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

CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PAR. 1/4" DEEP VISUAL JOINTS SHALL BE USED AT THE TOPS OF CONCRETE FLARES ADJACENT TO WALKABLE SURFACES. ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL, THUS BOTH SIDES OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH, (EXCEPT AS STATED IN ⑥ BELOW).

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

TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

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

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

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

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

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

LEGEND	
THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.	
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%.
⑦	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

LHB PROJECT NO. 170650

E 9TH/8TH ST RECONDITIONING

CITY PROJECT NO. 0855TR

S.P. 118-134-017

PEDESTRIAN CURB RAMP DETAILS

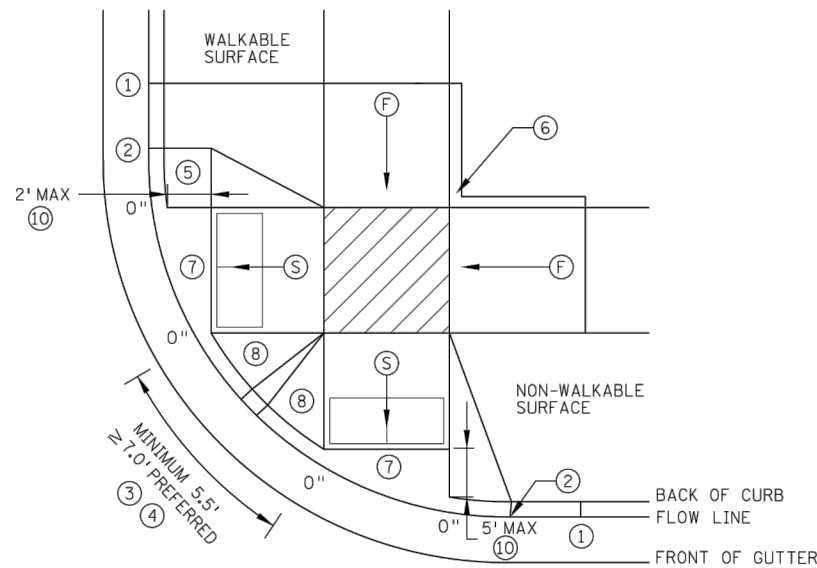
STANDARD PLAN 5-297.250

1 OF 6

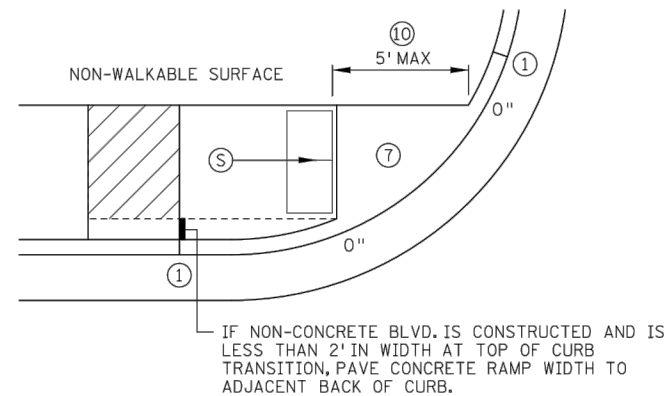
CONSTRUCTION DETAILS

SHEET NO. 24 OF 58 SHEETS

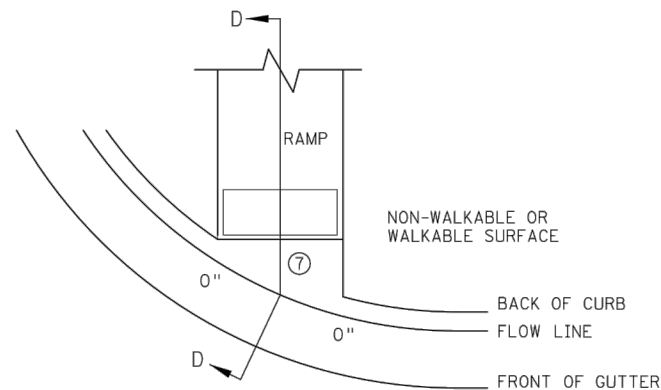
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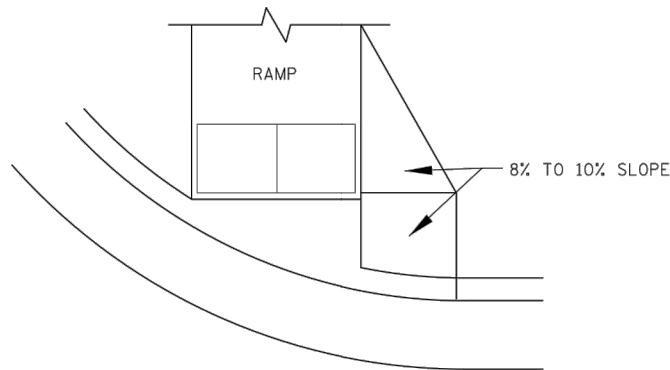
COMBINED DIRECTIONAL ⑨



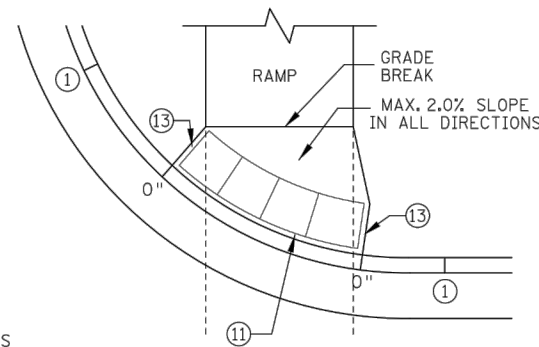
STANDARD ONE-WAY DIRECTIONAL ⑨



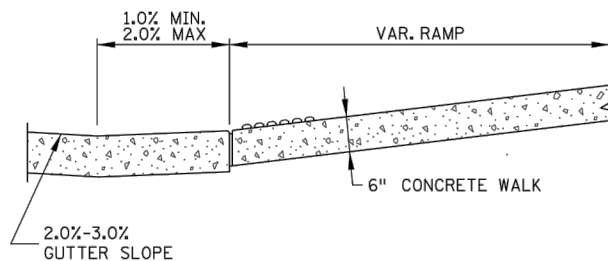
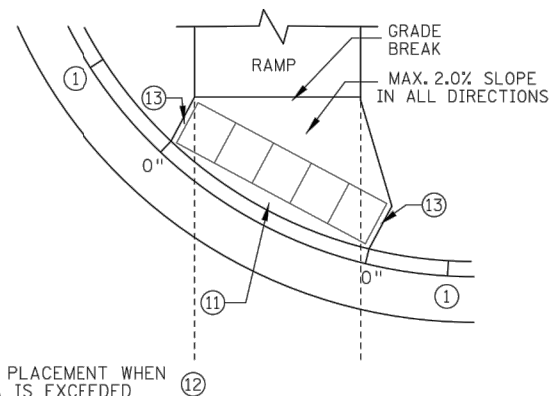
CURB FOR DIRECTIONAL RAMPS ⑭



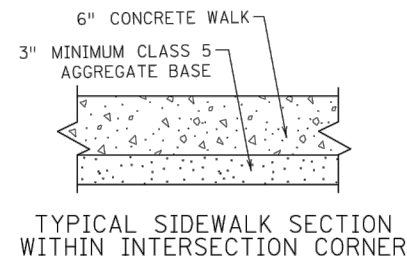
DIRECTIONAL RAMP WALKABLE FLARE



ONE-WAY DIRECTIONAL WITH DETECTABLE WARNING AT BACK OF CURB



SECTION D-D



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

PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250

2 OF 6

E 9TH/8TH ST RECONDITIONING

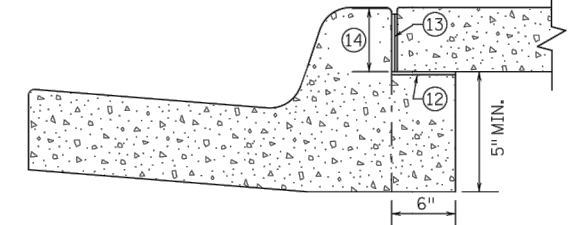
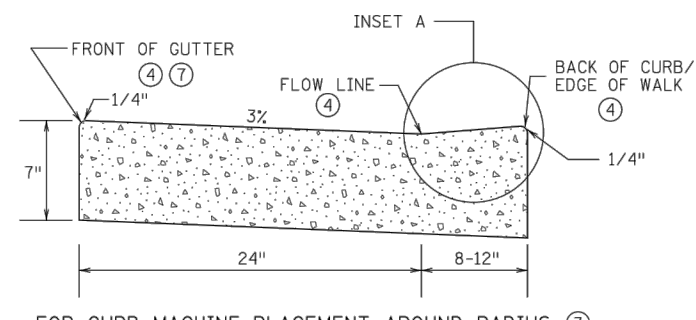
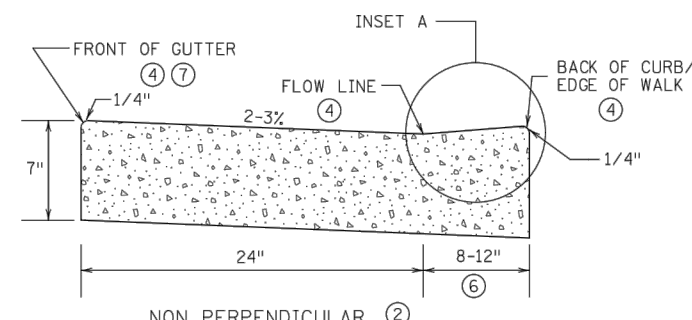
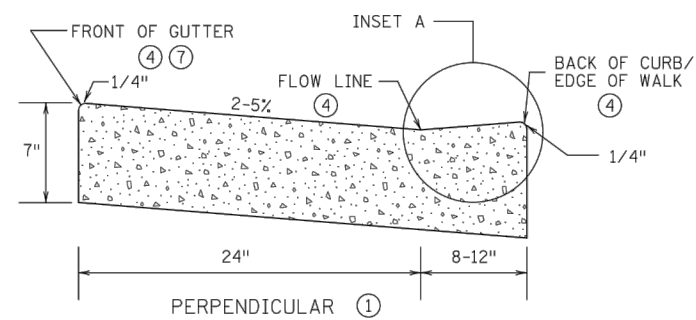
CITY PROJECT NO. 0855TR

S.P. 118-134-017

CONSTRUCTION DETAILS

SHEET NO. 25 OF 58 SHEETS

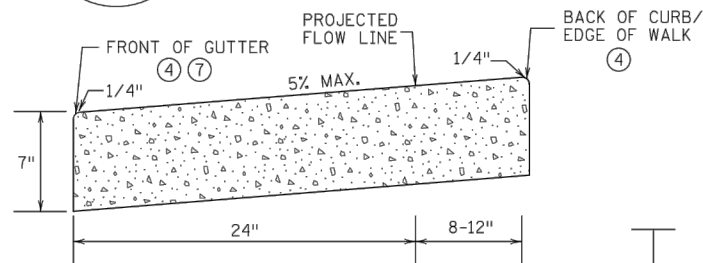
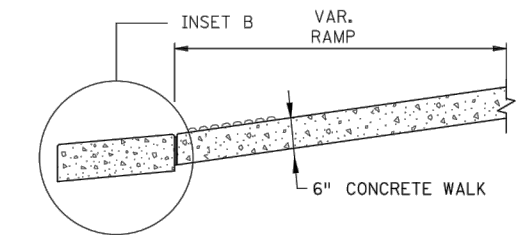
LHB PROJECT NO. 170650



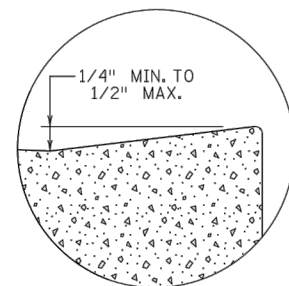
OPTIONAL SILL CURB WHEN SIDEWALK IS AT BACK OF CURB

CONCRETE SILL TO BE USED ONLY WHEN SPECIFIED IN THE PLAN.

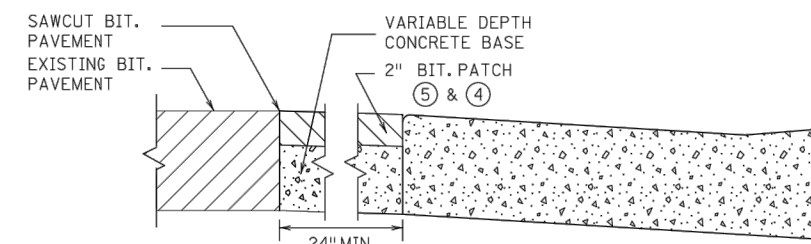
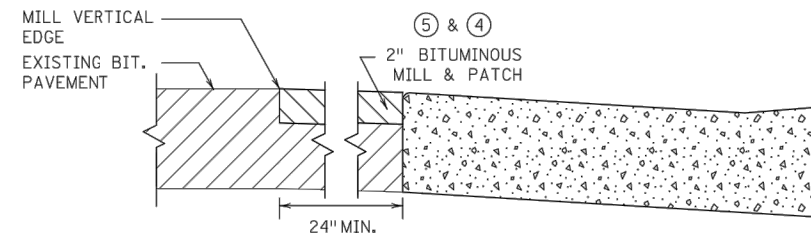
PEDESTRIAN ACCESS ROUTE CURB & GUTTER DETAIL



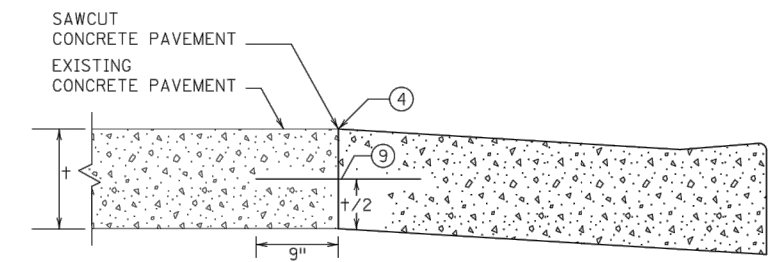
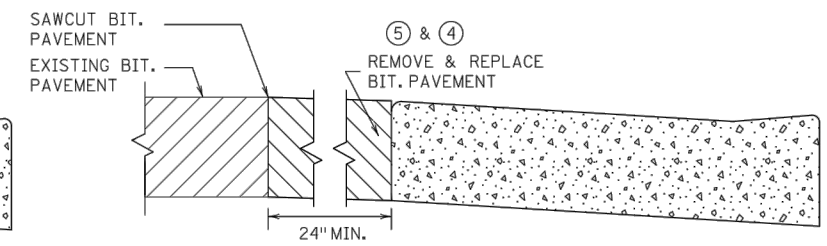
INSET B
OUTFLOW GUTTER ⑧



INSET A



ONLY ALLOWED PER ENGINEER'S APPROVAL



PAVEMENT TREATMENT OPTIONS IN FRONT OF CURB & GUTTER
FOR USE ON CURB RAMP RETROFITS

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 RAMP.

② 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.

③ BEGIN GUTTER SLOPE TRANSITION 10' OUTSIDE OF ALL CURB RAMP.

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.

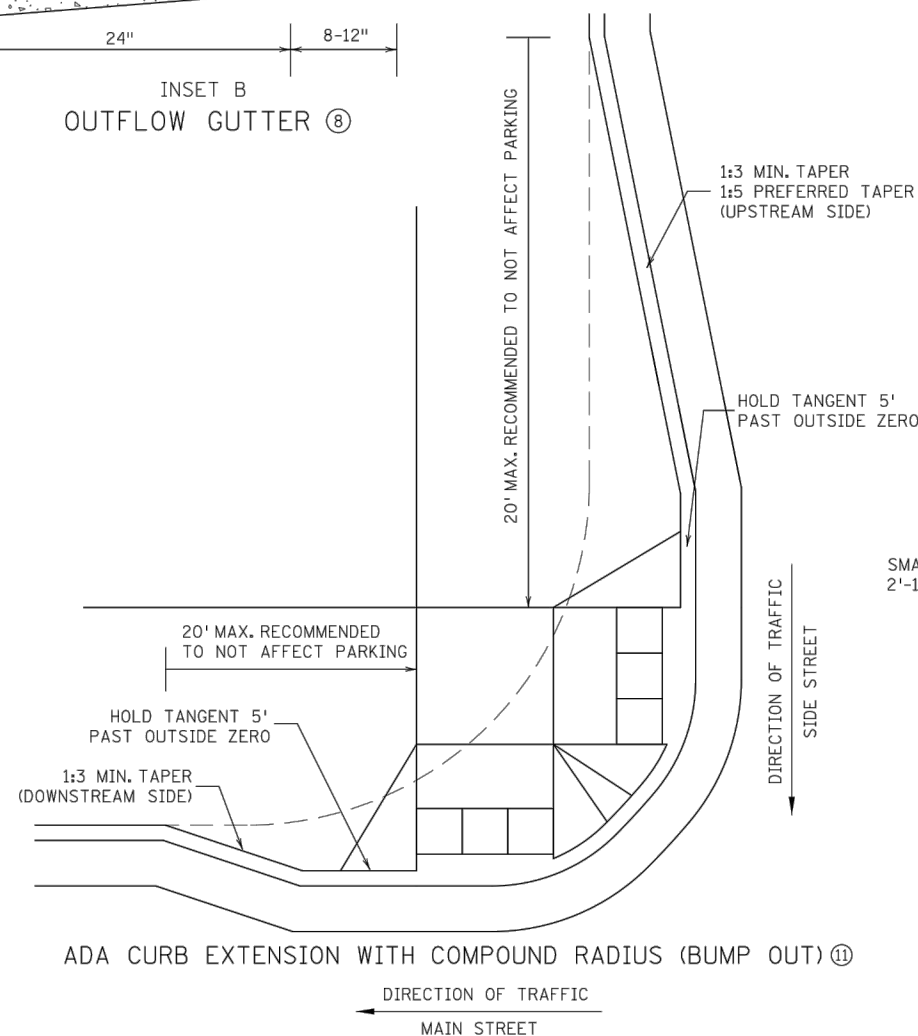
⑩ HELPS PROVIDE TWO SEPARATE RAMP, REDUCES THE DOME SETBACK LENGTH AND MINIMIZES DIRECTIONAL CURB. THIS RADIUS DESIGN CLOSELY FOLLOWS THE TURNING VEHICLE PATH WHILE OPTIMIZING CURB RAMP LENGTH.

⑪ CURB EXTENSIONS SHOULD BE USED IN VERTICALLY CONSTRAINED AREAS, USUALLY IN DOWNTOWN ROADWAY SEGMENTS WHERE ON-STREET PARKING IS AVAILABLE. CURB EXTENSIONS SHOULD BE CONSIDERED FOR APS INTERSECTIONS WHERE SPACE IS LIMITED. PUSH BUTTONS MUST MEET APS CRITERIA AS DESCRIBED IN THE PUSH BUTTON LOCATION DETAIL SHEET.

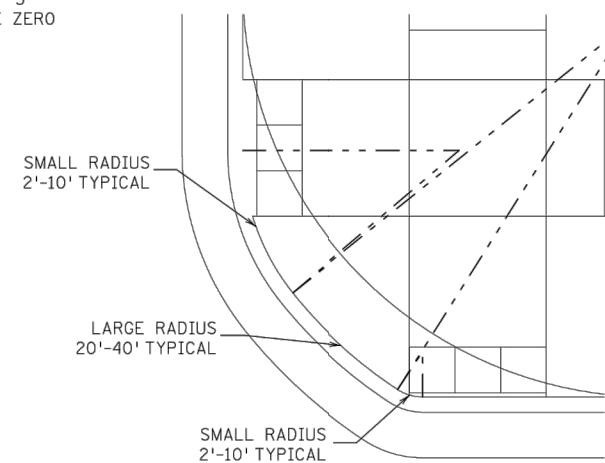
⑫ PLACE BOND BREAKER BETWEEN WALK AND TOP OF SILL.

⑬ 1/2" PREFORMED JOINT FILLER PER MNDOT SPEC. 3702.

⑭ DIMENSION TO BE SAME AS SIDEWALK THICKNESS, 4" MIN.



ADA CURB EXTENSION WITH COMPOUND RADIUS (BUMP OUT) ⑪



COMBINED DIRECTIONAL ⑩
(COMPOUND RADIUS)

PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250

3 OF 6

E 9TH/8TH ST RECONDITIONING

CITY PROJECT NO. 0855TR

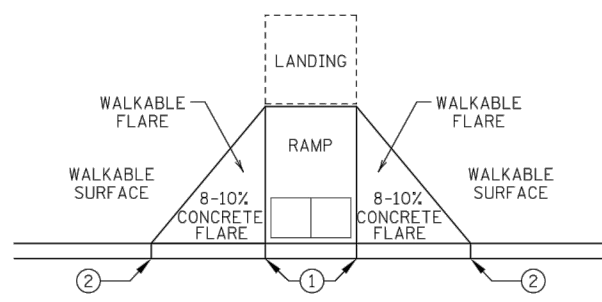
S.P. 118-134-017

CONSTRUCTION DETAILS

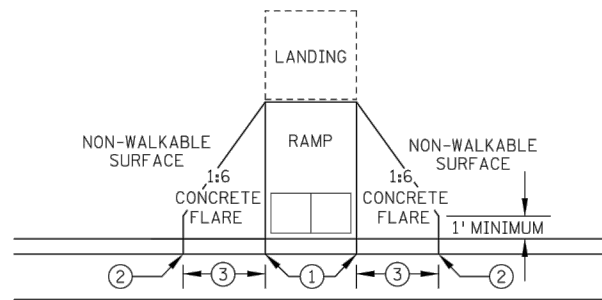
SHEET NO. 26 OF 58 SHEETS

LHB PROJECT NO. 170650

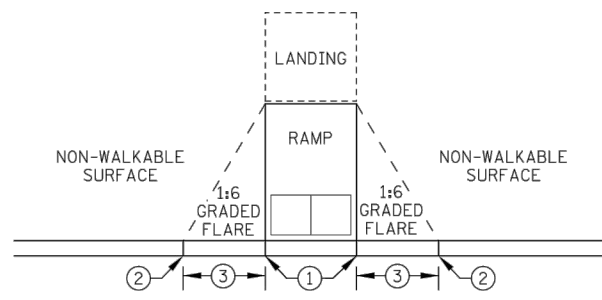
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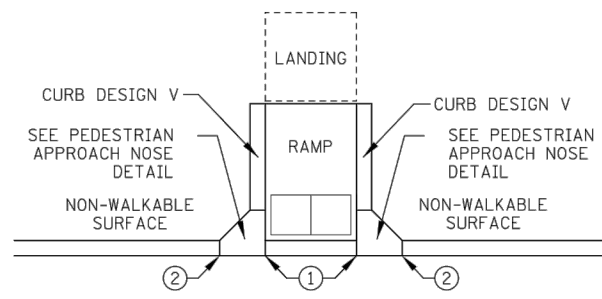
PAVED FLARES
ADJACENT TO WALKABLE SURFACE



PAVED FLARES
ADJACENT TO NON-WALKABLE SURFACE

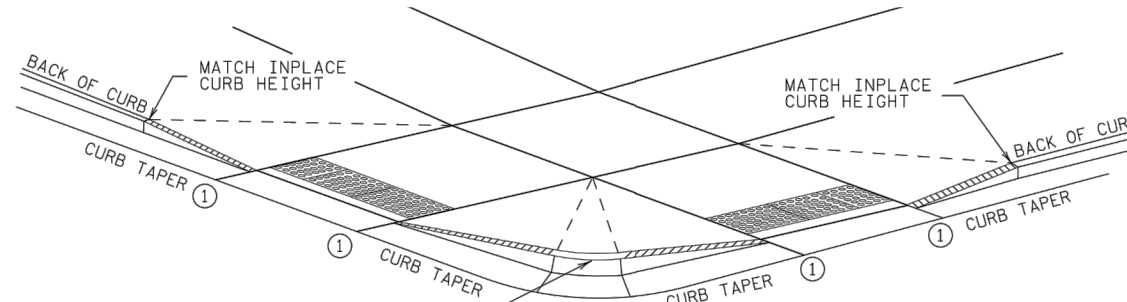


GRADED FLARES



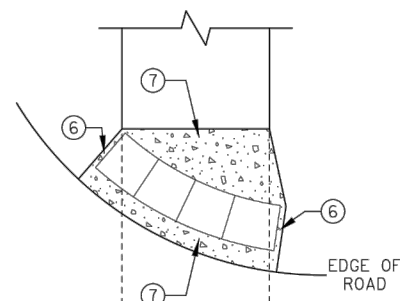
RETURNED CURB ⑤

TYPICAL SIDE TREATMENT OPTIONS ④ ⑪

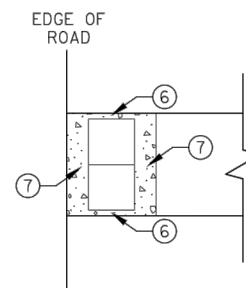


3" MINIMUM CURB HEIGHT, 4" PREFERRED
(MEASURED AT FRONT FACE OF CURB)
FOR A MIN. 6" LENGTH (MEASURED ALONG FLOW LINE)

DETECTABLE EDGE WITH ⑧
CURB AND GUTTER

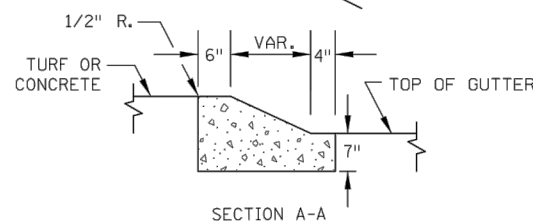
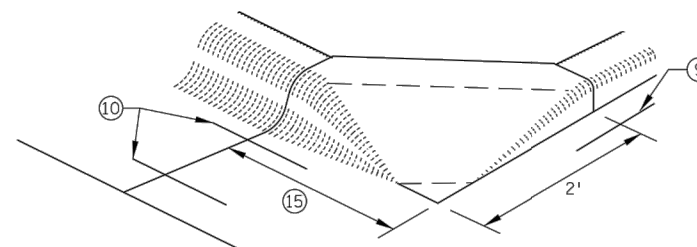


RADIAL DETECTABLE WARNING

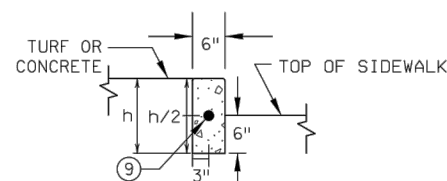


RECTANGULAR DETECTABLE WARNING

DETECTABLE EDGE WITHOUT CURB AND GUTTER

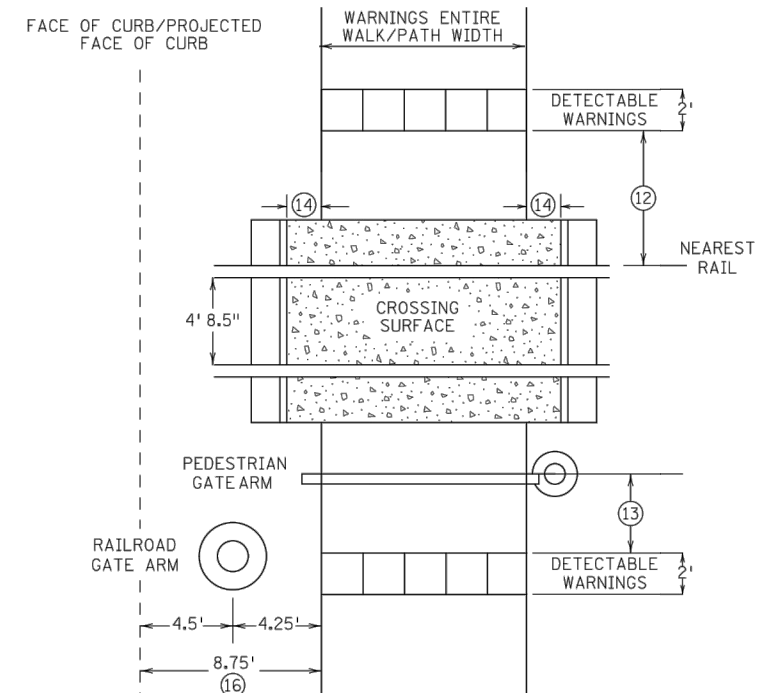


SECTION A-A



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.
- 0" CURB HEIGHT.
- FULL CURB HEIGHT.
- 2' FOR 4" HIGH CURB AND 3' FOR 6" HIGH CURB.
- 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.
- TYPICALLY USED FOR MEDIANS AND ISLANDS.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- CROSSING SURFACE SHALL EXTEND 2' MINIMUM PAST THE OUTSIDE EDGE OF WALK OR SHARED-USE PATH.
- 3' FOR MEDIANS AND SPLITTER ISLANDS. NOSE CAN BE REDUCED TO 2' ON FREE RIGHT ISLANDS.
- 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.

PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250 4 OF 6

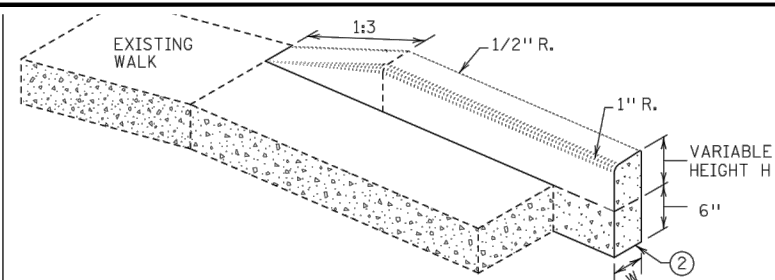
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CITY PROJECT NO. 0855TR

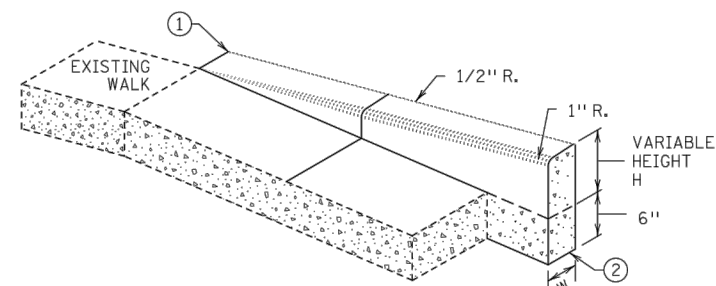
S.P. 118-134-017

CONSTRUCTION DETAILS

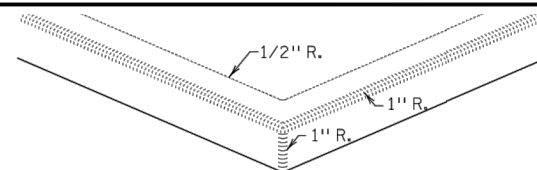
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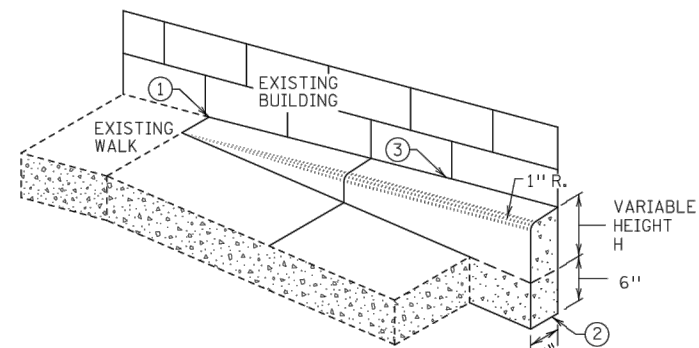
V CURB ADJACENT TO LANDSCAPE
CURB WITHIN SIDEWALK LIMITS



V CURB ADJACENT TO LANDSCAPE
CURB OUTSIDE SIDEWALK LIMITS

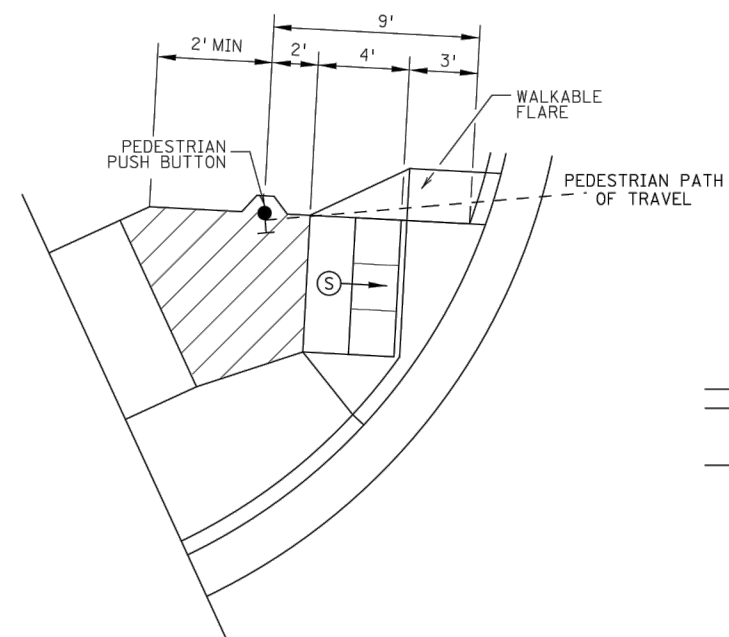


V CURB INTERSECTION



V CURB ADJACENT TO BUILDING
OR BARRIER

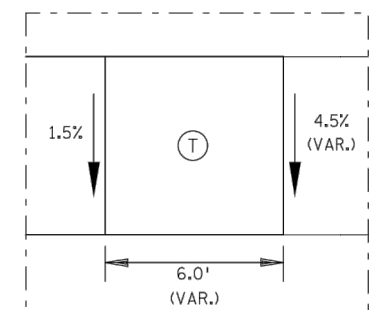
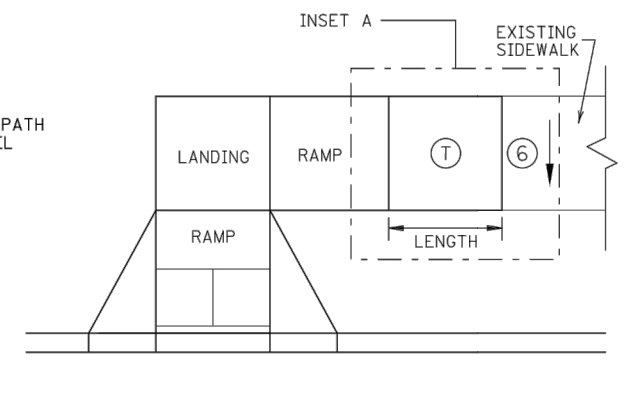
CONCRETE CURB DESIGN V	
CURB HEIGHT H	CURB WIDTH W
< 6"	4"
> 6"	6"



SEMI-DIRECTIONAL RAMP (3,4,9)

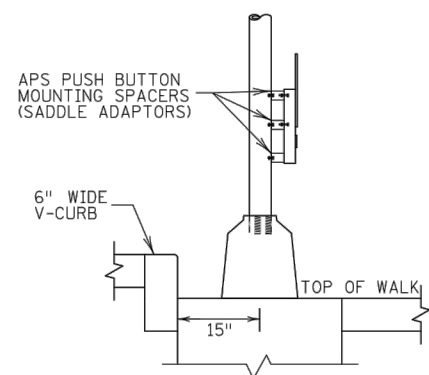
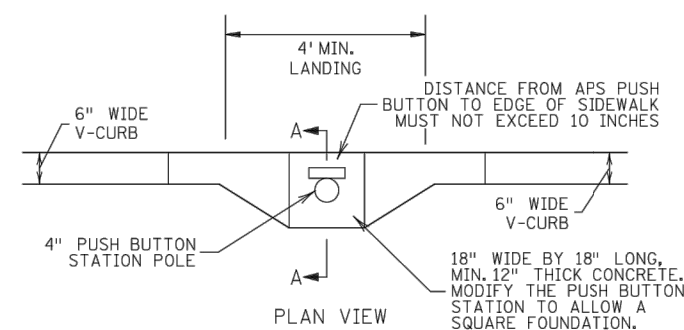
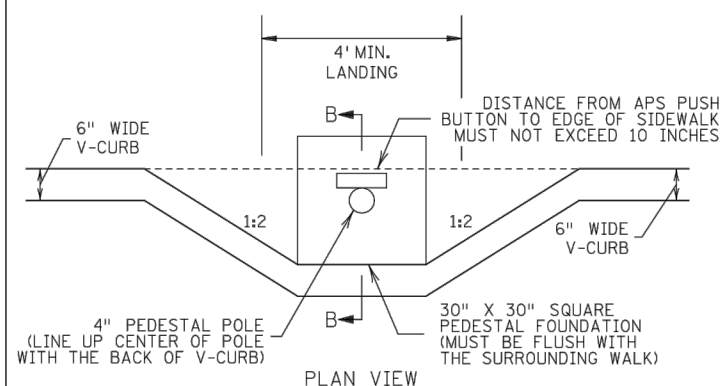
3' DOME SETBACK, 4' LONG RAMP AND
PUSH BUTTON 9' FROM THE BACK OF CURB

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

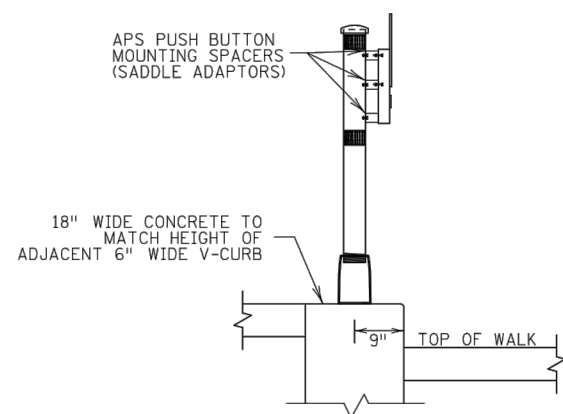


INSET A

TRANSITION PANEL ④ ⑤



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 NEXT TO BUILDING SHALL BE A 4" WIDTH AND SHALL MATCH PREVIOUS TOP OF SIDEWALK ELEVATIONS.

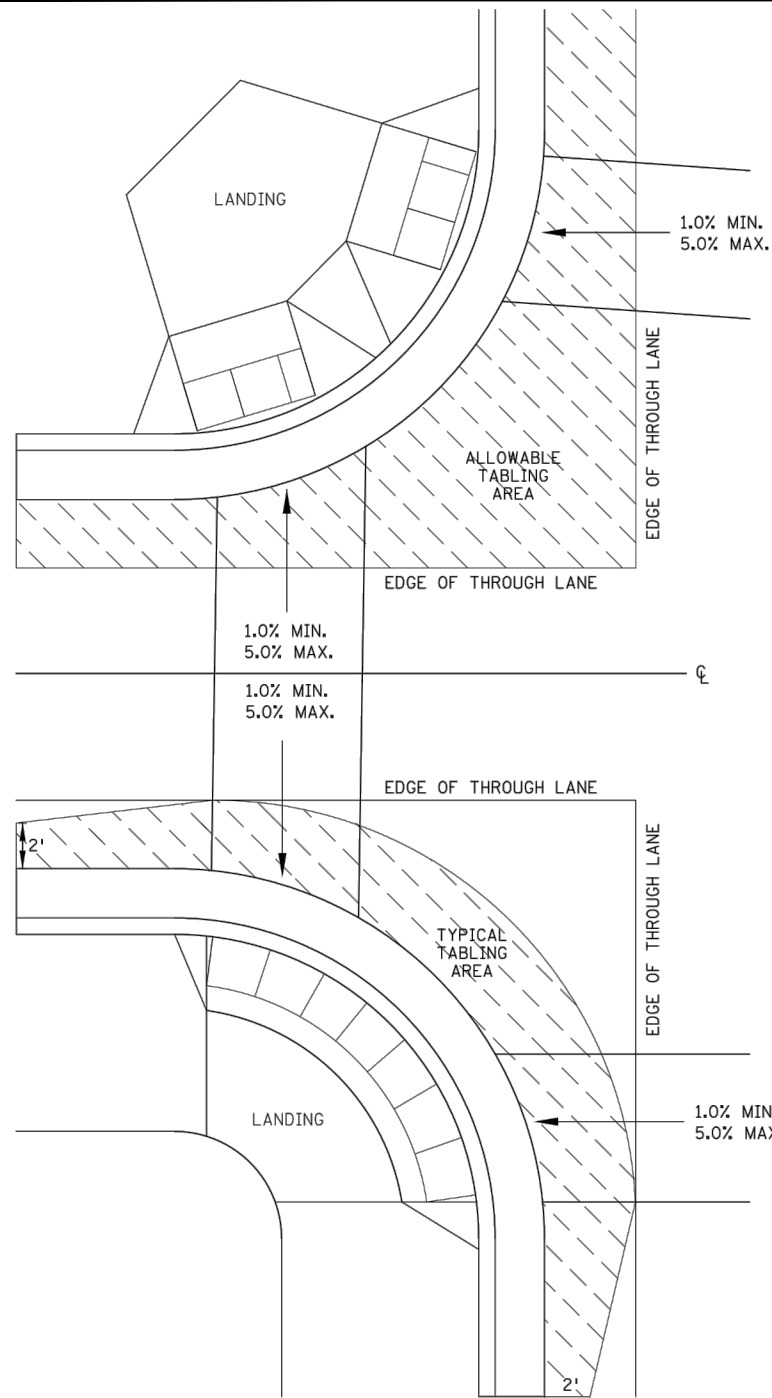
- ① END TAPERS AT TRANSITION SECTION SHALL MATCH INPLACE SIDEWALK GRADES.
- ② ALL V CURB SHALL MATCH BOTTOM OF ADJACENT WALK.
- ③ EDGE BETWEEN NEW V CURB AND INPLACE STRUCTURE SHALL BE SEALED AND BOND BREAKER SHALL BE USED BETWEEN EXISTING STRUCTURE AND PLACED V-CURB.
- ④ THE MAX. RATE OF CROSS SLOPE 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.

- (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%.
- (T) 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.
- (T) 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.

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CURB LINE AND ROAD CROSSING ADJUSTMENTS

"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.

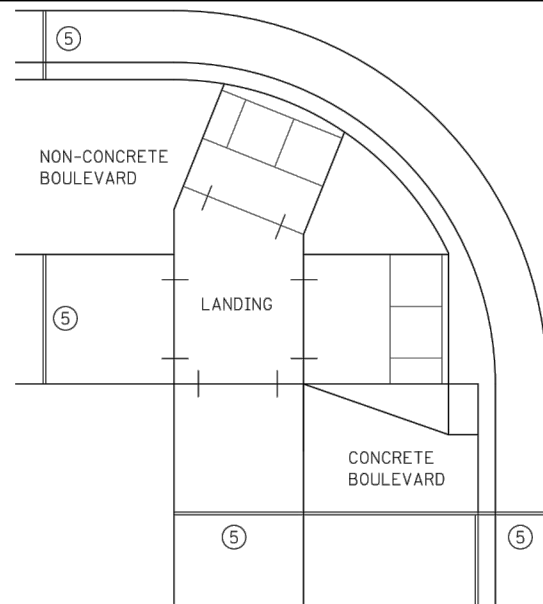
MILL & OVERLAY PROJECTS: "TABLING" OF FLOW LINES, IN FRONT OF THE PEDESTRIAN RAMP, IS REQUIRED WHEN THE EXISTING FLOW LINE IS GREATER THAN 2%. WARPING OF THE BITUMINOUS PAVEMENT CAN NOT EXTEND INTO THE THROUGH LANE. TABLE THE FLOW LINE TO 2% OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA:

- 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

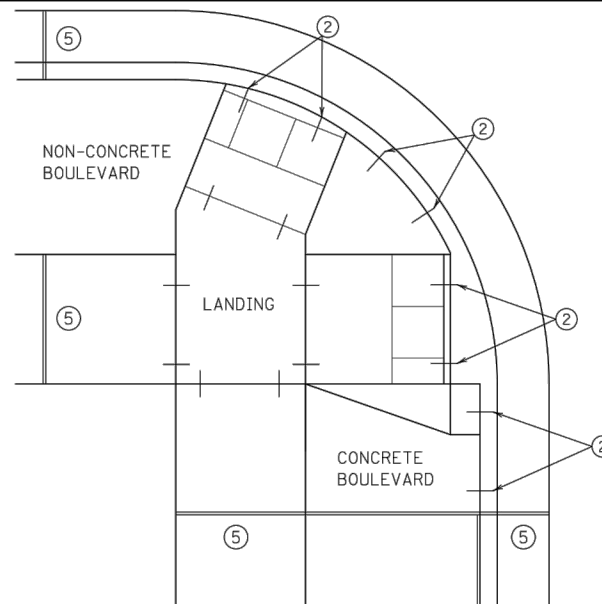
STAND-ALONE ADA RETROFITS: FOLLOW MILL & OVERLAY CRITERIA ABOVE HOWEVER ALL PAVEMENT WARPING IS DONE WITH BITUMINOUS PATCHING ON BITUMINOUS ROADWAYS AND FULL-DEPTH APRON REPLACEMENT ON CONCRETE ROADWAYS.

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:

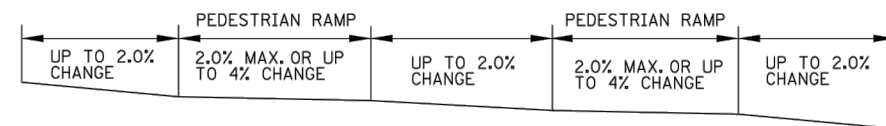
- 1) 1.0% MIN. AND 5.0% MAXIMUM CROSS-SLOPE OF THE ROAD
- 2) 1.0% MIN. FLOW LINE (ON EITHER SIDE OF PEDESTRIAN RAMP) TO MAINTAIN POSITIVE DRAINAGE
- 3) 5.0% RECOMMENDED MAX. FLOW LINE
- 4) LONGITUDINAL THROUGH LANE ROADWAY TAPERS SHOULD BE 1" VERTICAL PER 15' HORIZONTAL



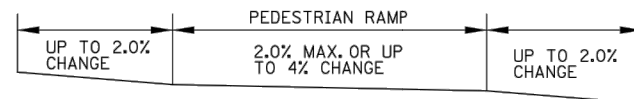
EXPANSION MATERIAL PLACEMENT FOR CONCRETE AND BITUMINOUS ROADWAYS



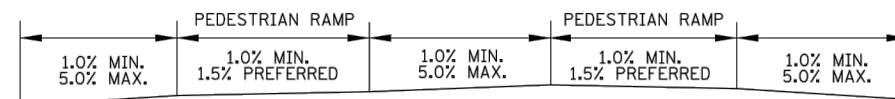
OPTIONAL CURB LINE REINFORCEMENT PLACEMENT ON BITUMINOUS ROADWAYS ④



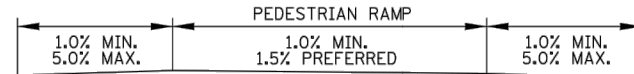
FLOW LINE PROFILE "TABLE" - TWIN PERPENDICULARS



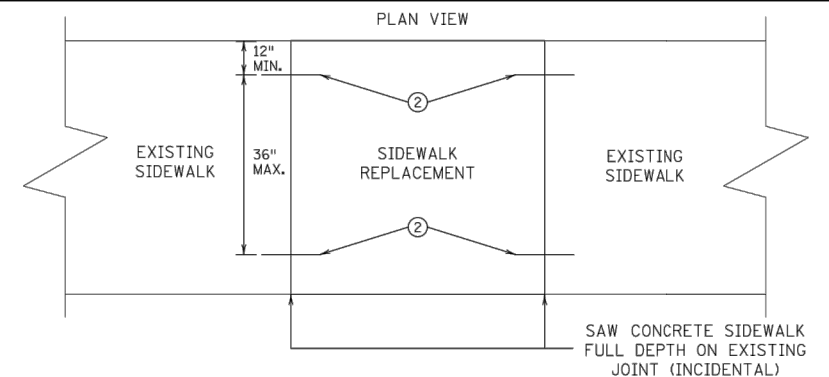
FLOW LINE PROFILE "TABLE" - FAN



FLOW LINE PROFILE RAISE - TWIN PERPENDICULARS

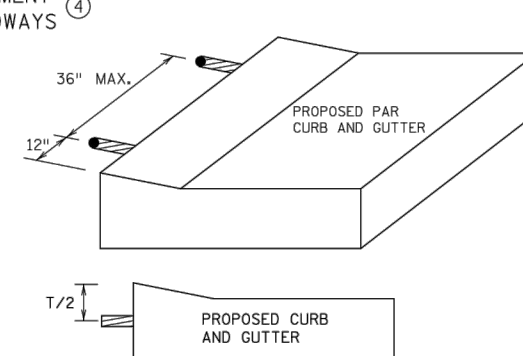


FLOW LINE PROFILE RAISE - FAN

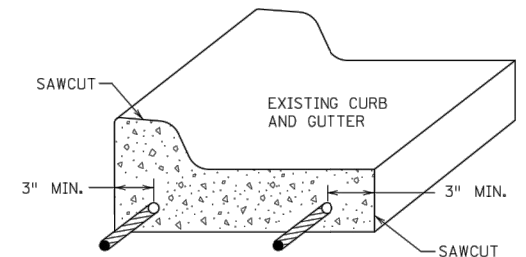


OPTIONAL SIDEWALK REINFORCEMENT

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

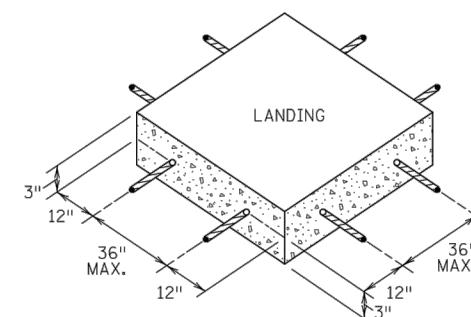


OPTIONAL CURB LINE REINFORCEMENT DETAILS ②④



FOR USE ON CURB RAMP RETROFITS

CURB AND GUTTER REINFORCEMENT ③



SEPARATE LANDING POUR REINFORCEMENT ①

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.

PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250

6 OF 6

E 9TH/8TH ST RECONDITIONING

CITY PROJECT NO. 0855TR

S.P. 118-134-017

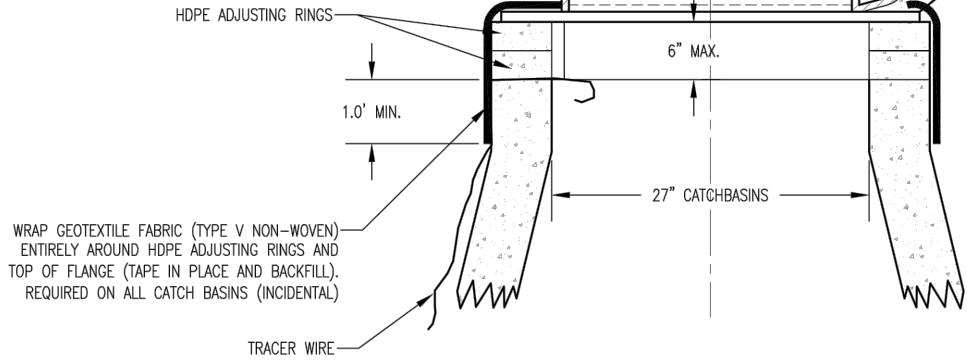
CONSTRUCTION DETAILS

SHEET NO. 29 OF 58 SHEETS

LHB PROJECT NO. 170650

PLOT DATE: 5/14/2018 8:20:03 AM FILE: J:\7Prel\170650\600 Drawings\CA\170650_08A-City Details.dwg

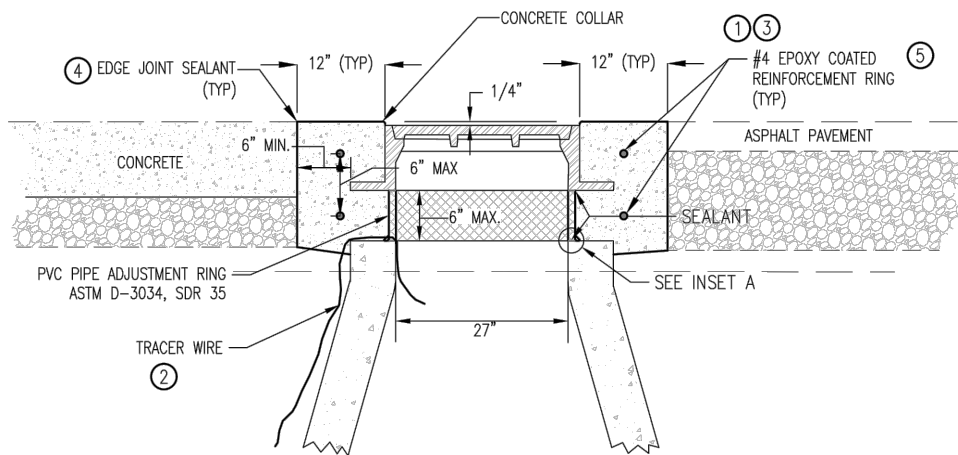
NOTE:
TRACER WIRE REQUIRED ON ALL PLASTIC STORM SEWER PIPES



WRAP GEOTEXTILE FABRIC (TYPE V NON-WOVEN) ENTIRELY AROUND HDPE ADJUSTING RINGS AND TOP OF FLANGE (TAPE IN PLACE AND BACKFILL). REQUIRED ON ALL CATCH BASINS (INCIDENTAL)

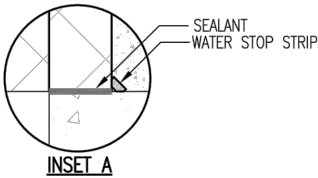
TRACER WIRE

FABRIC WRAPPED CATCH BASIN CASTING		STRM-4
REVIEWED/APPROVED 02/19/2015	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE



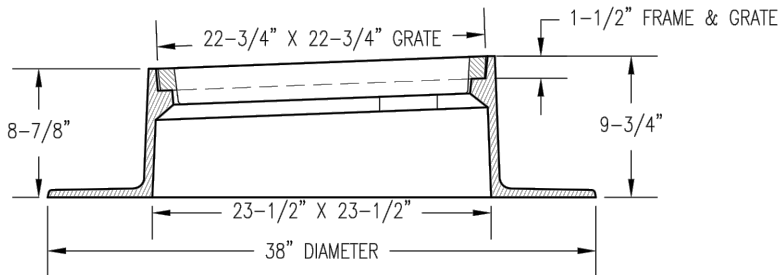
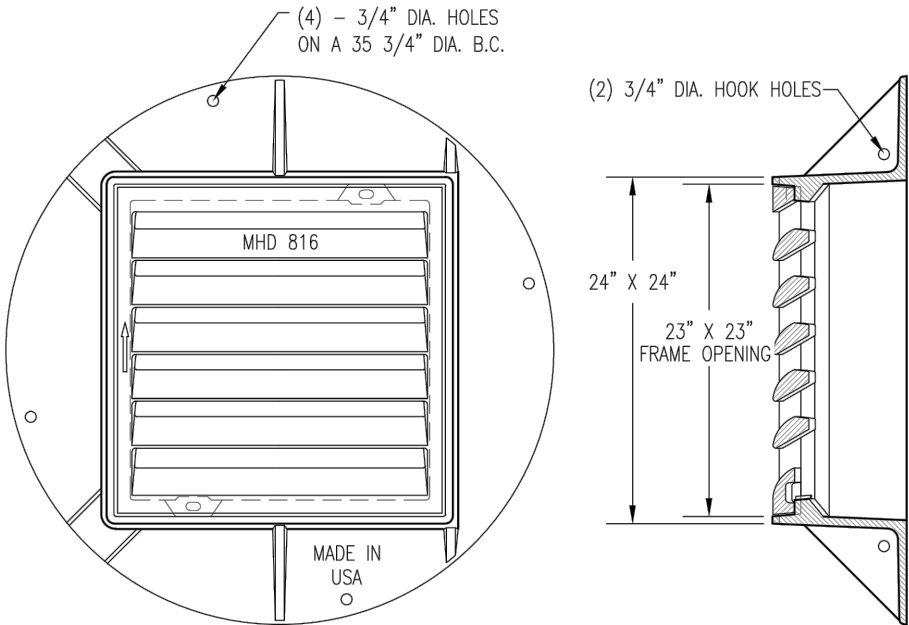
NOTES:

1. CONCRETE (MIX NO. 3652) COLLAR TO ENCASE CASTING AND ADJUSTMENT RING.
2. TRACER WIRE, IF REQUIRED, FOR PLASTIC PIPE ON PROJECT
3. CONCRETE COLLAR SHALL BE CIRCULAR LAYOUT. PAVEMENT AND BASE SHALL BE CUT OUT WITH ROTATING CUTTING DEVICE
4. FINISH CONCRETE EDGE WITH 1/4" RADIUS. SEAL JOINT BETWEEN PAVEMENT AND COLLAR.
5. MAINTAIN 3.5" COVER ON REINFORCEMENT.



INSET A

CONCRETE ENCASED CASTING COLLAR FOR STORM MH IN ROADWAY, WALKS, & DRIVES		STRM-5A
REVIEWED/APPROVED 01/20/2017	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE



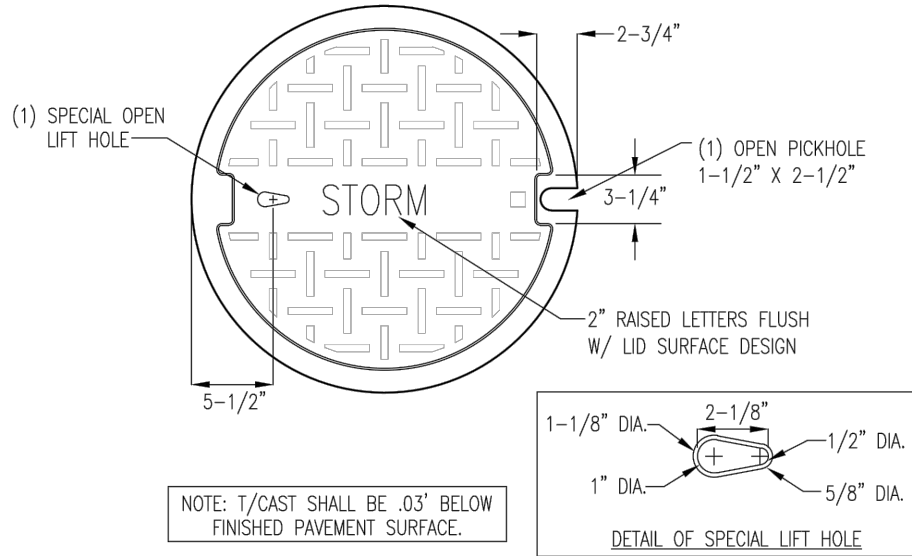
NOTES:

1. COMPONENT NO'S: GRATE 816 (STD PLATE 4154B).
2. MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
3. WEIGHT: FRAME 262#; GRATE 131#
4. ALL GUTTERS UPSTREAM OF CATCH BASINS SHALL BE STAMPED, "NO DUMPING, LEADS TO LAKE" WITH A CITY SUPPLIED STAMP.

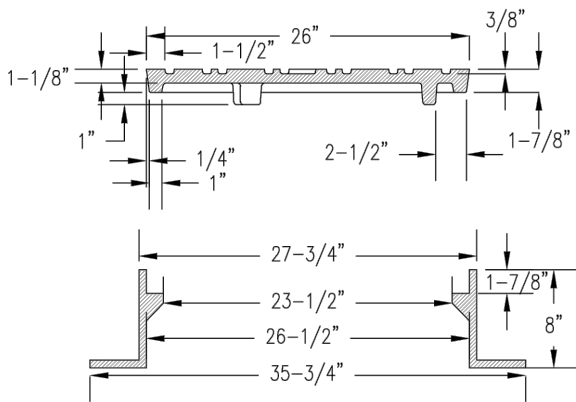
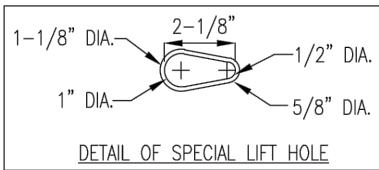
CATCH BASIN CASTINGS		STRM-3
REVIEWED/APPROVED 1/8/2016	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE

WGT. 298 LBS	MATL. GRAY IRON CLASS 35B
WGT. 122 LBS	TOT.WGT. 420 LBS. SPEC. ASTM A-48-74

NOTE: SUITABLE FOR HS25 WHEEL LOADS



NOTE: T/CAST SHALL BE .03' BELOW FINISHED PAVEMENT SURFACE.



STORM MANHOLE CASTING		STRM-1
REVIEWED/APPROVED 2/01/2013	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE

LHB PROJECT NO. 170650

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BRAD SCOTT
PRINTED NAME

SIGNATURE

05/11/2018
DATE
46198
LIC. NO.

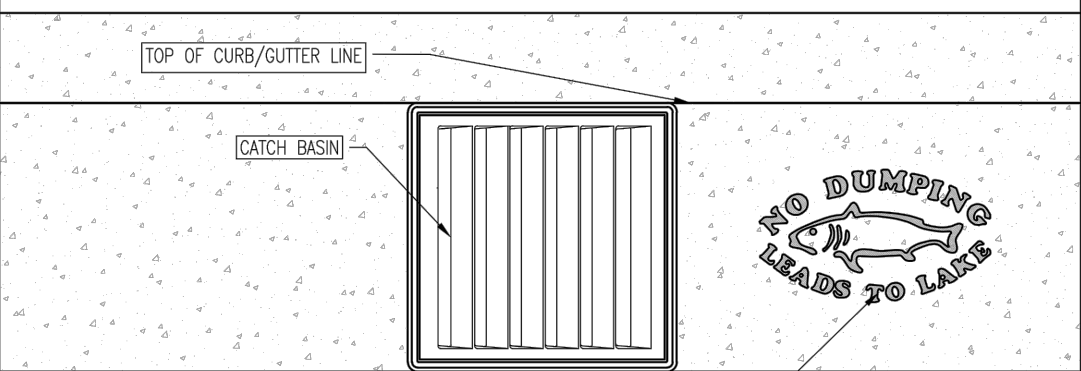
E 9TH/8TH ST RECONDITIONING
CITY PROJECT NO. 0855TR

S.P. 118-134-017

CONSTRUCTION DETAILS

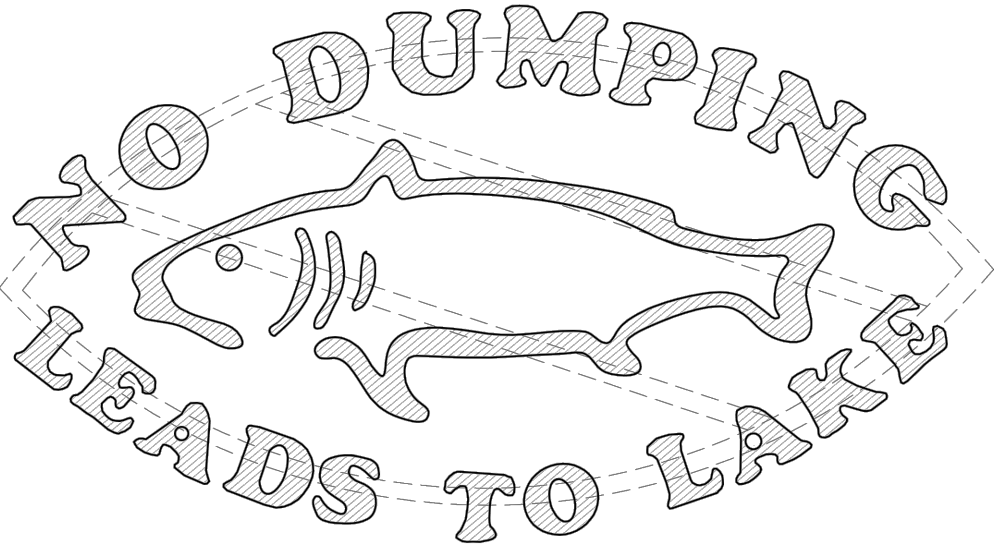
SHEET NO. 31 OF 58 SHEETS

PLOT DATE: 5/14/2018 8:20:13 AM FILE: J:\7Pro\170650\600 Drawings\170650 06A-City Details.dwg

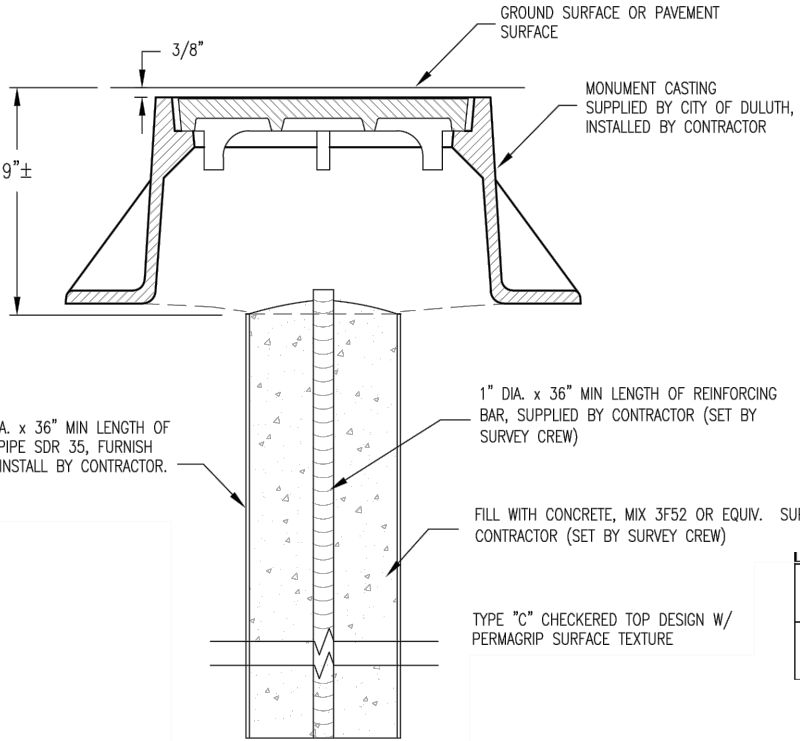


GUTTER STAMP TO BE PLACED A MAXIMUM OF 18" FROM CATCH BASIN GRATE ON UPHILL SIDE AND CENTERED IN GUTTER.

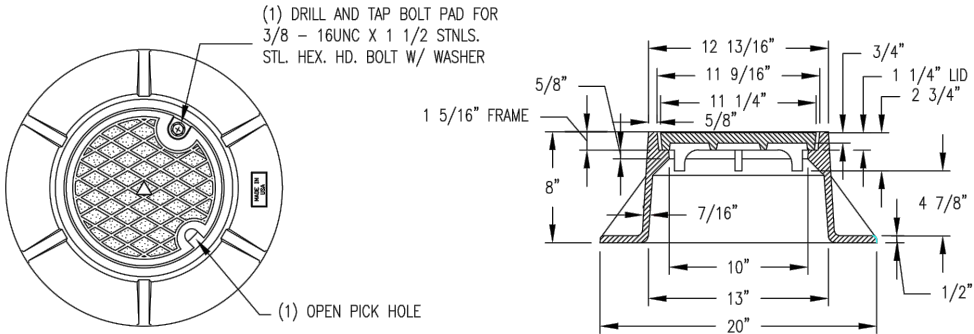
GUTTER STAMP TO BE OBTAINED FROM CITY OF DULUTH BY CONTRACTOR.



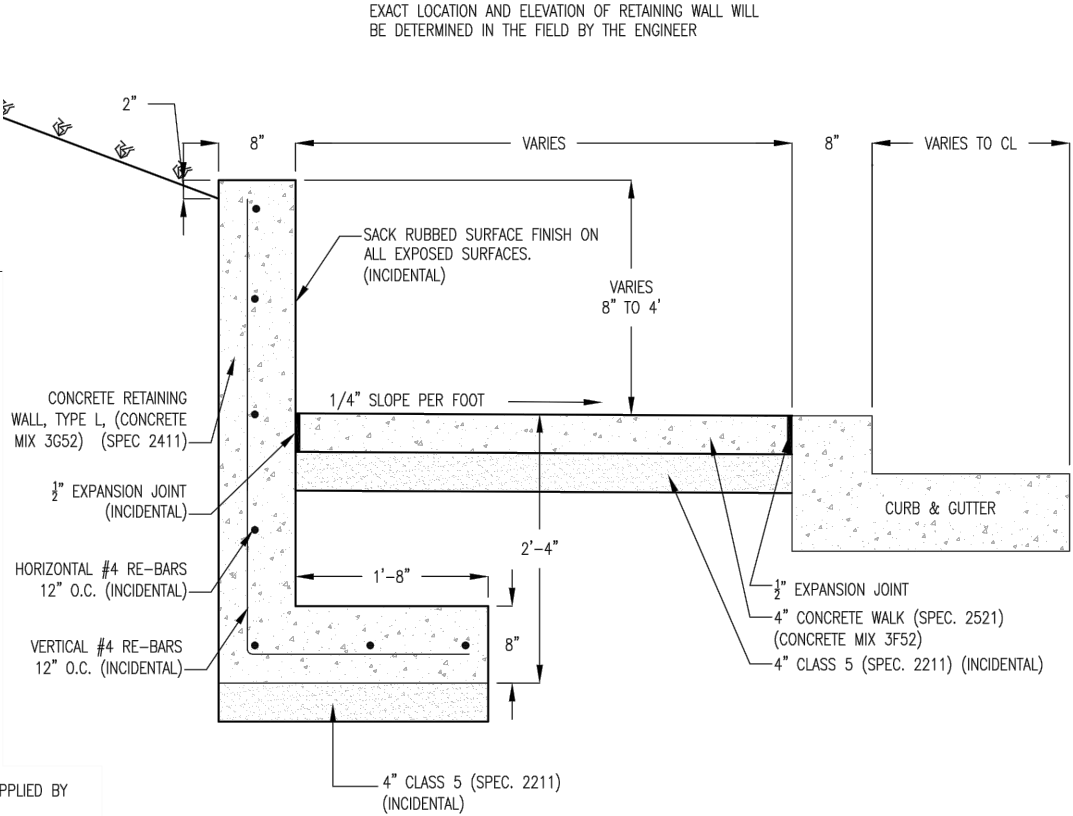
GUTTER STAMP		STRM-7
REVIEWED/APPROVED 2/01/2013	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE



- NOTE:
1. LOCATION TO BE DIRECTED AND COORDINATED WITH SURVEY CREW.
 2. FRAME & SOLID LID, BOLTED.
 3. MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
 4. FINISH: NO PAINT
 5. WEIGHT: FRAME 83#, LID 24#.



SURVEY MONUMENT		SUR-1
REVIEWED/APPROVED 01/20/2017	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE



CONCRETE RETAINING WALL, TYPE L		STR-6
REVIEWED/APPROVED 01/20/2017	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE

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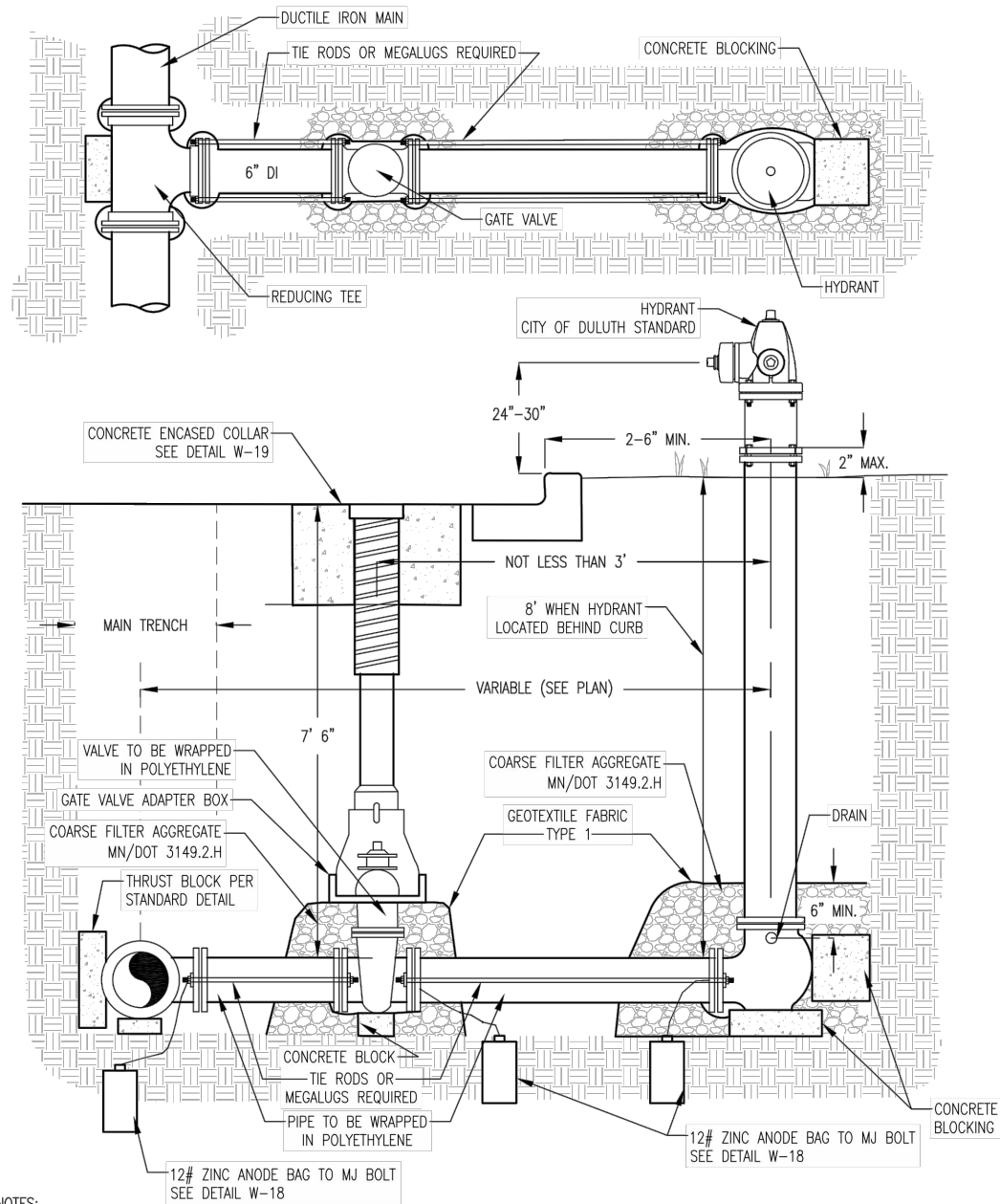
05/11/2018
DATE
46198
LIC. NO.

E 9TH/8TH ST RECONDITIONING
CITY PROJECT NO. 0855TR

S.P. 118-134-017

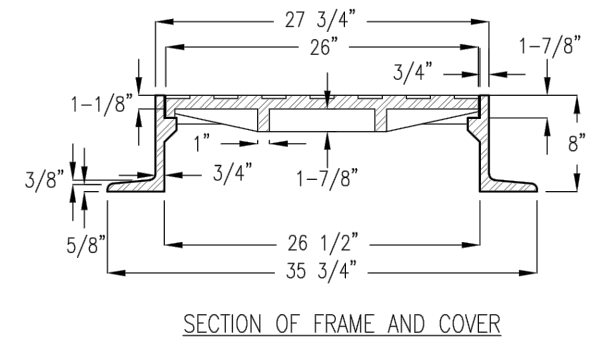
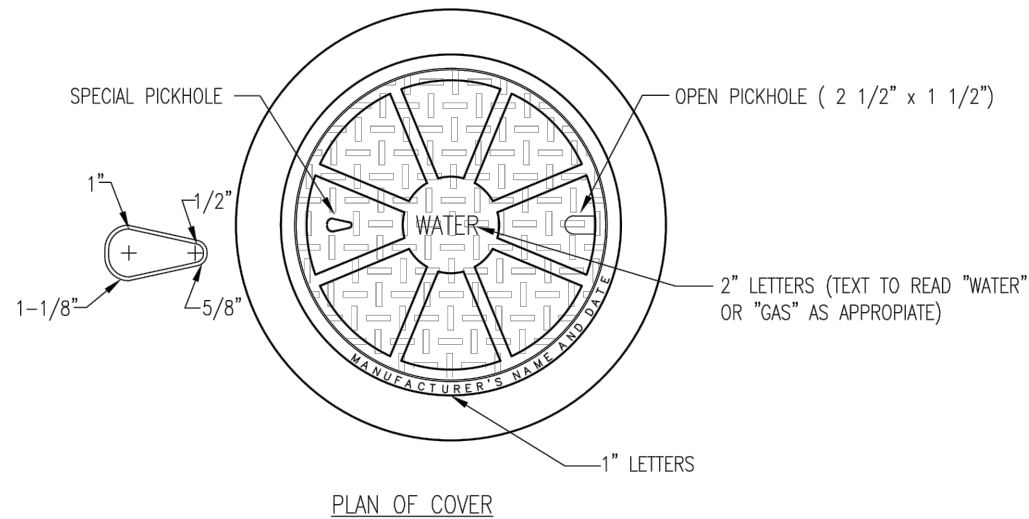
CONSTRUCTION DETAILS

SHEET NO. 32 OF 58 SHEETS



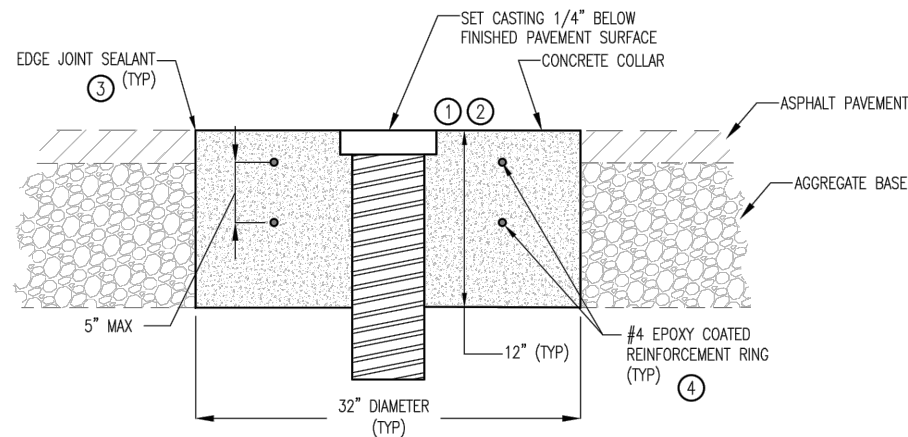
- NOTES:
1. VALVES SHALL BE CONNECTED DIRECTLY TO AN ANCHORING TEE. WHENEVER DIRECT CONNECTION IS NOT POSSIBLE, TIE RODS OR MEGALUGS SHALL BE USED. TIE RODS SHALL BE GALVANIZED.
 2. USE EPOXY COATING ON VALVE AND HYDRANT BASE.
 3. ALL BOLTS SHALL BE COR-TEN WITH 6 OUNCE ZINC ANODE CAPS CONFORMING TO ASTM B-418 FOR ALL MECHANICAL JOINT FITTINGS.

FIRE HYDRANT SETTING DETAIL - DUCTILE IRON		W-4
REVISED/APPROVED 02/07/2017	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE



NOTE: ROUND OFF ALL EXPOSED EDGES FURNISHED WITH MACHINED HORIZONTAL BEARING SURFACES.
WEIGHT: RING-295 LBS. COVER - 162 LBS. SIMILAR OR EQUAL TO NEENAH FOUNDRY NQR-1723 (EXCEPT WITH LETTERING AS NOTED)

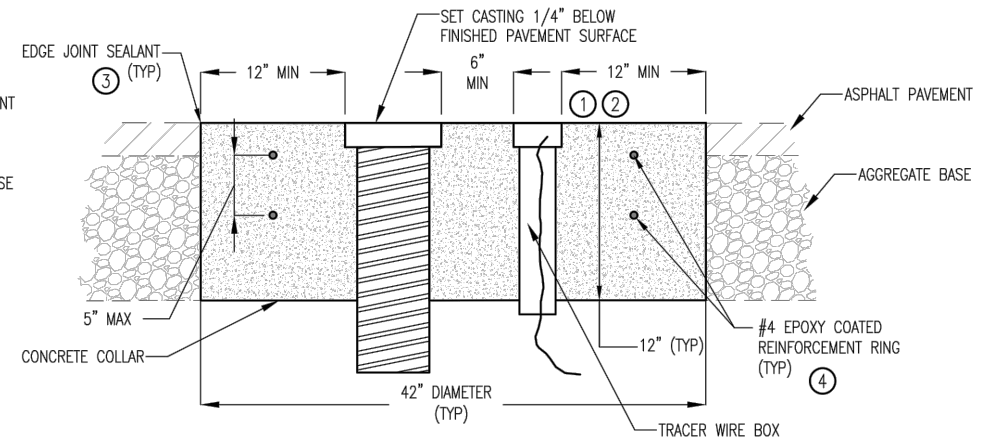
CAST IRON WATER MANHOLE FRAME AND COVER		W-15
REVISED/APPROVED 2/01/2013	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE



- NOTES:
1. CONCRETE (MIX NO. 3G52) COLLAR TO ENCASE VALVE BOX CASTING.
 2. CONCRETE COLLAR SHALL BE CIRCULAR LAYOUT. PAVEMENT AND BASE SHALL BE CUT OUT WITH ROTATING CUTTING DEVICE.
 3. FINISH CONCRETE EDGE WITH 1/4" RADIUS. SEAL JOINT BETWEEN PAVEMENT AND COLLAR.
 4. MAINTAIN 3.5" COVER ON REINFORCEMENT.

CONCRETE ENCASED WATER VALVE BOX COLLAR

CONCRETE ENCASED VALVE BOX COLLAR IN ROADWAY		W-19
REVISED/APPROVED 01/20/2017	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE



CONCRETE ENCASED WATER VALVE BOX COLLAR W/ TRACER BOX ALTERNATIVE

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CITY PROJECT NO. 0855TR

S.P. 118-134-017

CONSTRUCTION DETAILS

SHEET NO. 33 OF 58 SHEETS

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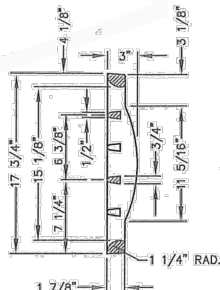
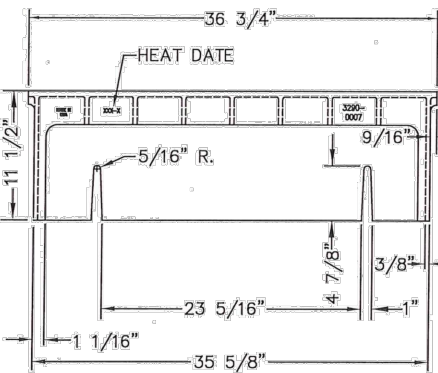
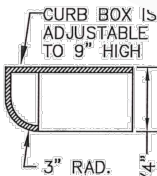
NOTES:

- CASTING SHALL BE CONSTRUCTED OF UNPAINTED GRAY IRON MEETING ASTM A-48, CLASS 35B OR BETTER AND SHALL CONFORM TO AASHTO DESIGNATION M306-89 AND MnDOT SPECIFICATION 3321.
- EACH CASTING SHALL BEAR AN IDENTIFICATION MARK, RECESSED FLUSH, INDICATING THE SOURCE OF MANUFACTURE, WHICH MARK SHALL EITHER BE A SYMBOL NOT OVER 1 1/2 INCHES IN GREATEST DIMENSION OR IN LETTER FORM NO GREATER THAN 3/4 INCH IN HEIGHT AND 2 INCHES IN LENGTH. LOCATION OF IDENTIFICATION MARKS BY THE ENGINEER.
- GRATE SHALL BE AS DETAILED UNLESS NOTED OTHERWISE ON THE PLANS.

CURB BOX DETAIL

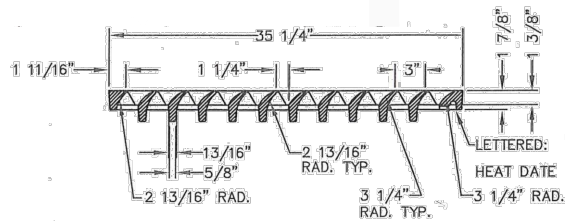
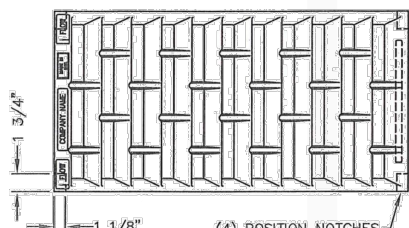
APPROXIMATE WEIGHT: 100#

TYPE "C" CHECKERED TOP DESIGN ENVIRONMENTAL NOTICE STAMPED FLUSH WITH TOP OF CURB BOX

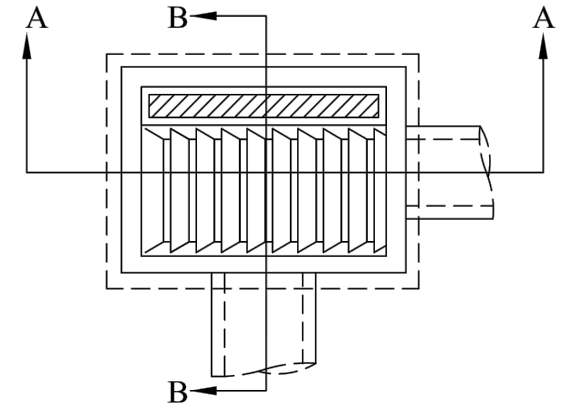
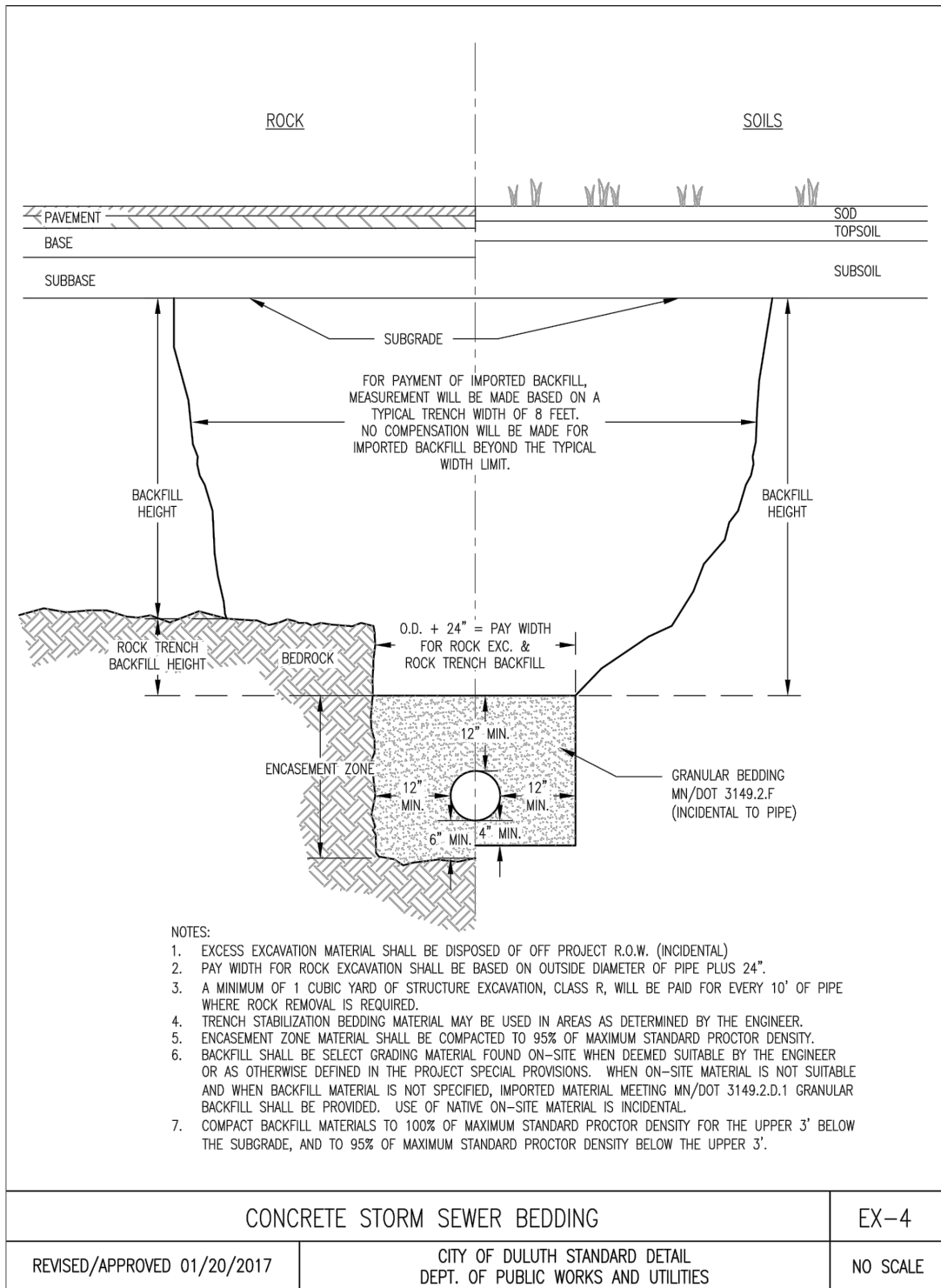
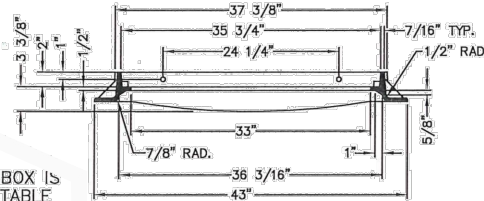
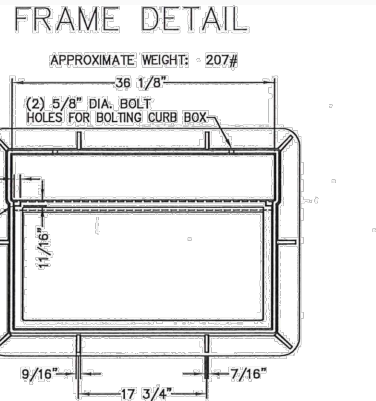


GRATE DETAIL

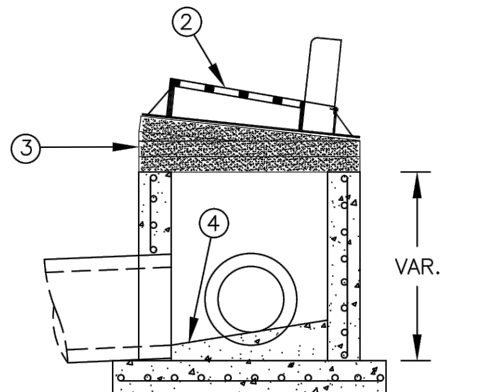
FREE OPEN AREA = 308 SQUARE INCHES
APPROXIMATE WEIGHT: 146#



CASTING SPECIAL



SECTION A-A



SECTION B-B

KEY NOTES

- PRECAST CONCRETE 2'X3' CATCH BASIN BOX WITH 5" (MIN.) WALL THICKNESS AND PRECAST CONCRETE 3.5'X4.5' BASE SLAB WITH 6" (MIN.) THICKNESS.
- REFER TO "CASTING SPECIAL" DETAIL FOR FRAME AND GRATE TYPE.
- ADJUST FRAME AND GRATE (INCIDENTAL).
- POUR FRESH CONCRETE AND FORM STRUCTURE INSIDE BOTTOM ELEVATION TO MATCH THE ELEVATION OF THE LOWEST PIPE INVERT ELEVATION (INCIDENTAL).
- REINFORCING SHALL BE A MIN OF SINGLE LINE STEEL WIRE FABRIC HAVING AN AREA OF NOT LESS THAN 0.12 SQ IN PER FOOT EACH DIRECTION.

CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL

LHB PROJECT NO. 170650

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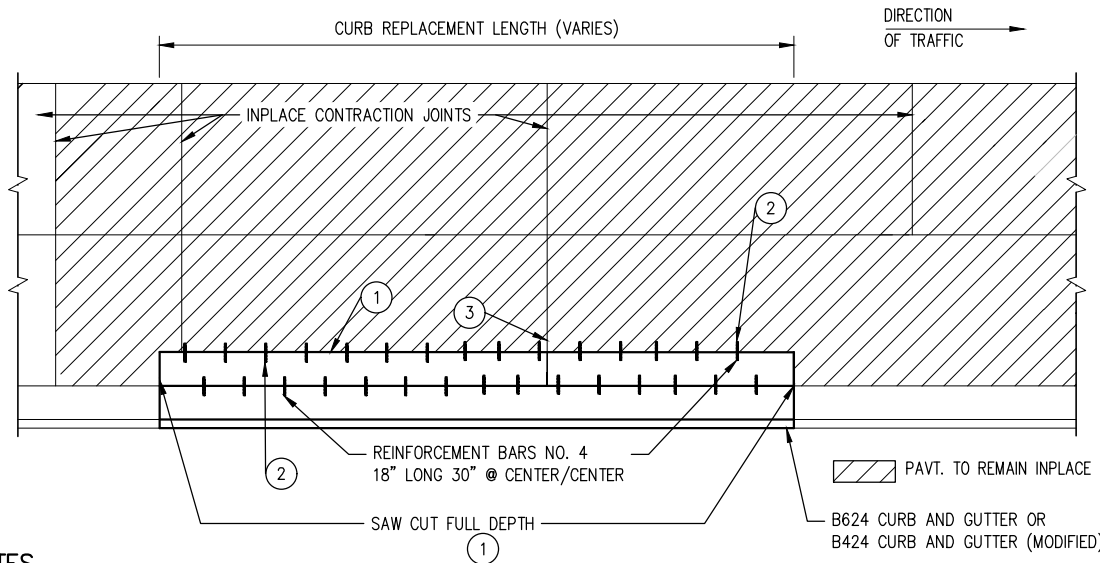
CITY PROJECT NO. 0855TR

S.P. 118-134-017

CONSTRUCTION DETAILS

SHEET NO. 34 OF 58 SHEETS

PLAN VIEW



NOTES

1. PLACE SAW CUT AT LEAST 2' UP STREAM OR 5' DOWN STREAM FROM ANY TRANSVERSE JOINTS IN THE ADJACENT LANE.

WORK TO BE DONE

1. SAW FULL DEPTH & REMOVE IN PLACE CONCRETE PAVEMENT. RESTORE AND COMPACT INPLACE BASE.
2. DRILL AND GROUT EPOXY COATED REINFORCEMENT BARS INTO THE ADJACENT PAVEMENT. PLACEMENT OF BARS MAY OCCUR AFTER CURB & GUTTER PLACEMENT.
3. PLACE CONCRETE CURB & GUTTER WITH EPOXY COATED REINFORCEMENT BARS.
4. CLEAN VERTICAL SURFACES OF INPLACE CONCRETE.
5. FURNISH AND PLACE CONCRETE MIX NUMBER 3R52.
6. VIBRATE, FINISH TO GRADE AND SLOPE, EDGE, TEXTURE, AND SAW JOINTS. MATCH INPLACE TRANSVERSE JOINTS.

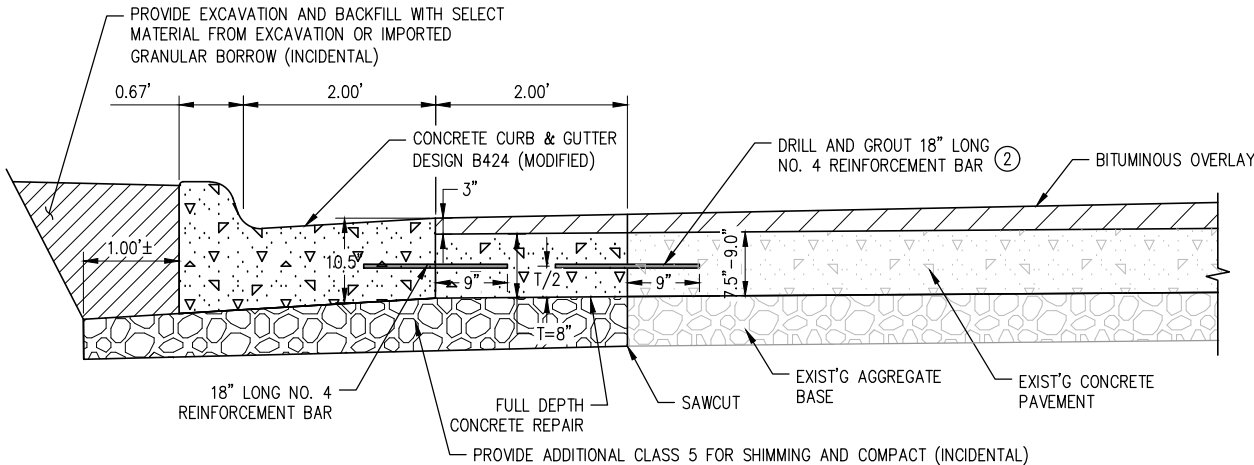
BASIS OF PAYMENT

2104	SAWING CONCRETE PAVEMENT (FULL DEPTH) (LIN FT) REMOVE PAVEMENT (SQ YD)
2301 2401	DRILL AND GROUT REINFORCEMENT BAR (EPOXY COATED) (EACH) REINFORCEMENT BARS (EPOXY COATED) (POUND)
2531	CONCRETE CURB & GUTTER DESIGN B624 (LIN FT) OR CONCRETE CURB & GUTTER DESIGN B424 (MODIFIED) (LIN FT).
2301	CONCRETE PAVEMENT (SPECIAL) (SQ YD) STRUCTURAL CONCRETE (CU YD)

13 CONCRETE CURB AND GUTTER REPLACEMENT

DESCRIPTION: REMOVE CONCRETE, RESTORE AND COMPACT BASE, PLACE REINFORCEMENT BARS, FURNISH AND PLACE CONCRETE, AND SAW JOINTS.

NOT TO SCALE



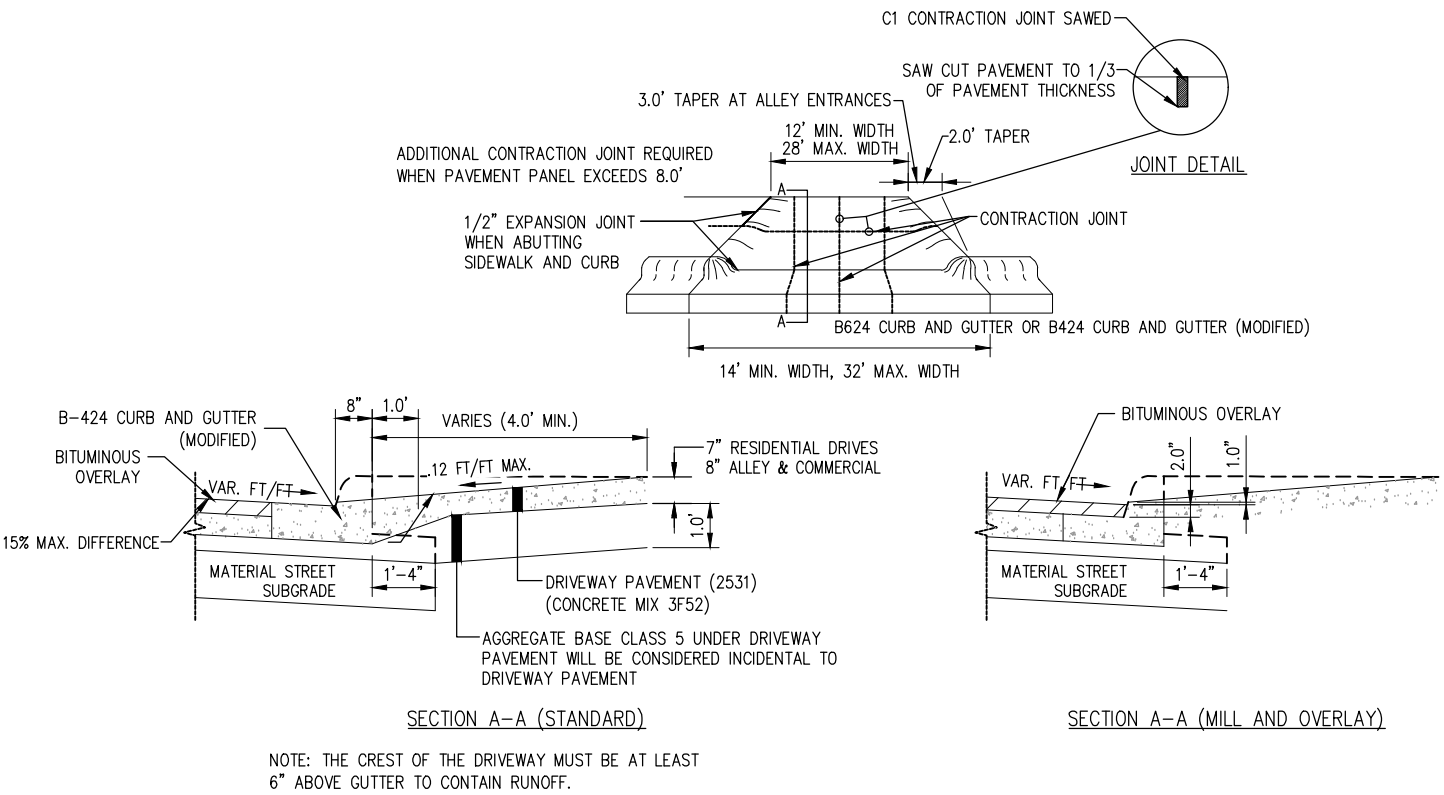
15 CURB REPLACEMENT TYPE B - B424 (MODIFIED)

APPLIES: AT ADA CURB RAMP RETROFITS (INTERSECTIONS)

NOT TO SCALE

14 DRIVEWAY & ALLEY ENTRANCES

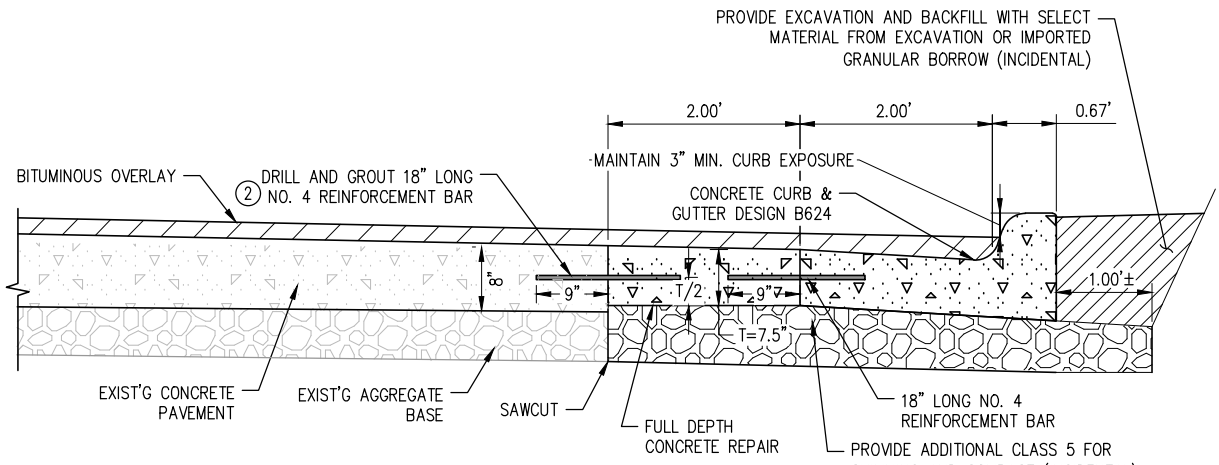
NTS



16 CURB REPLACEMENT TYPE A - B624

APPLIES: AT CURB REHABILITATION AREAS

NOT TO SCALE



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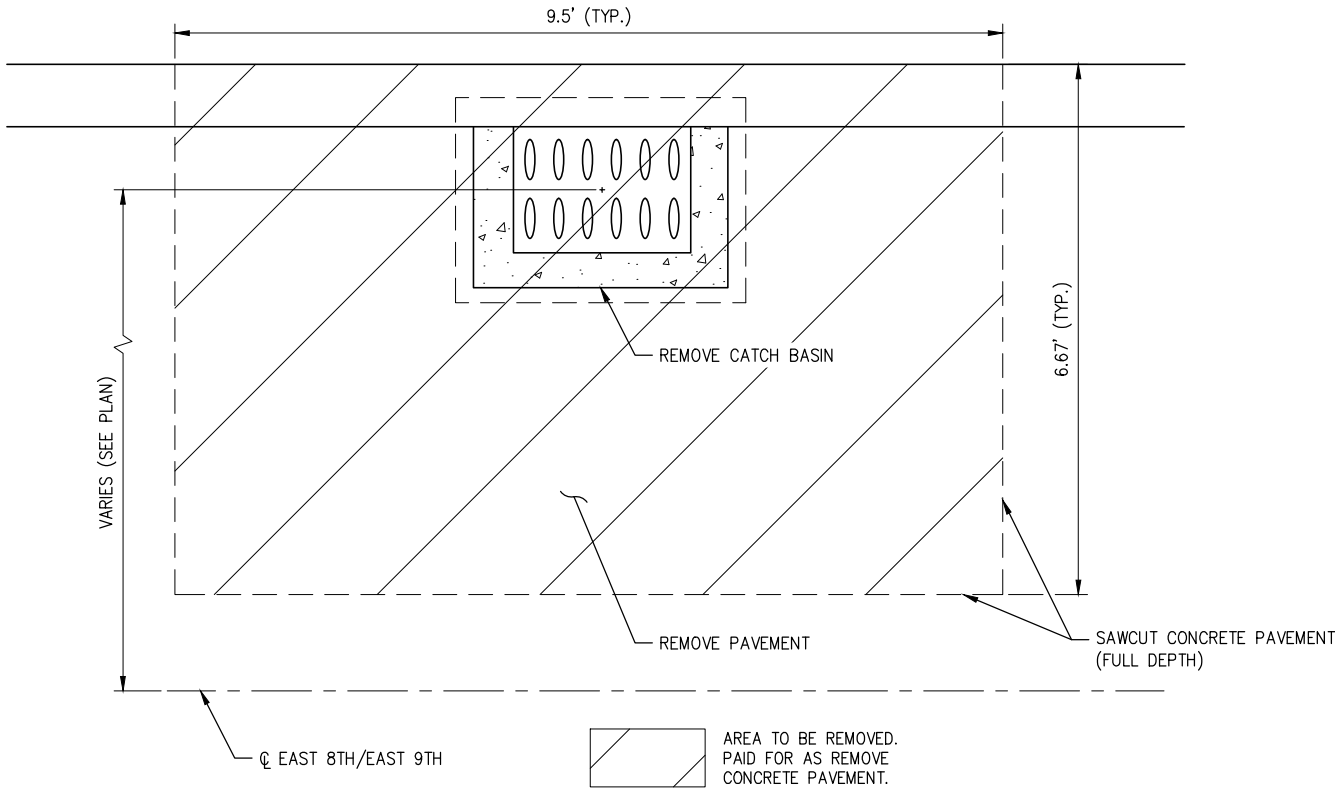
CONSTRUCTION DETAILS

SHEET NO. 35 OF 58 SHEETS

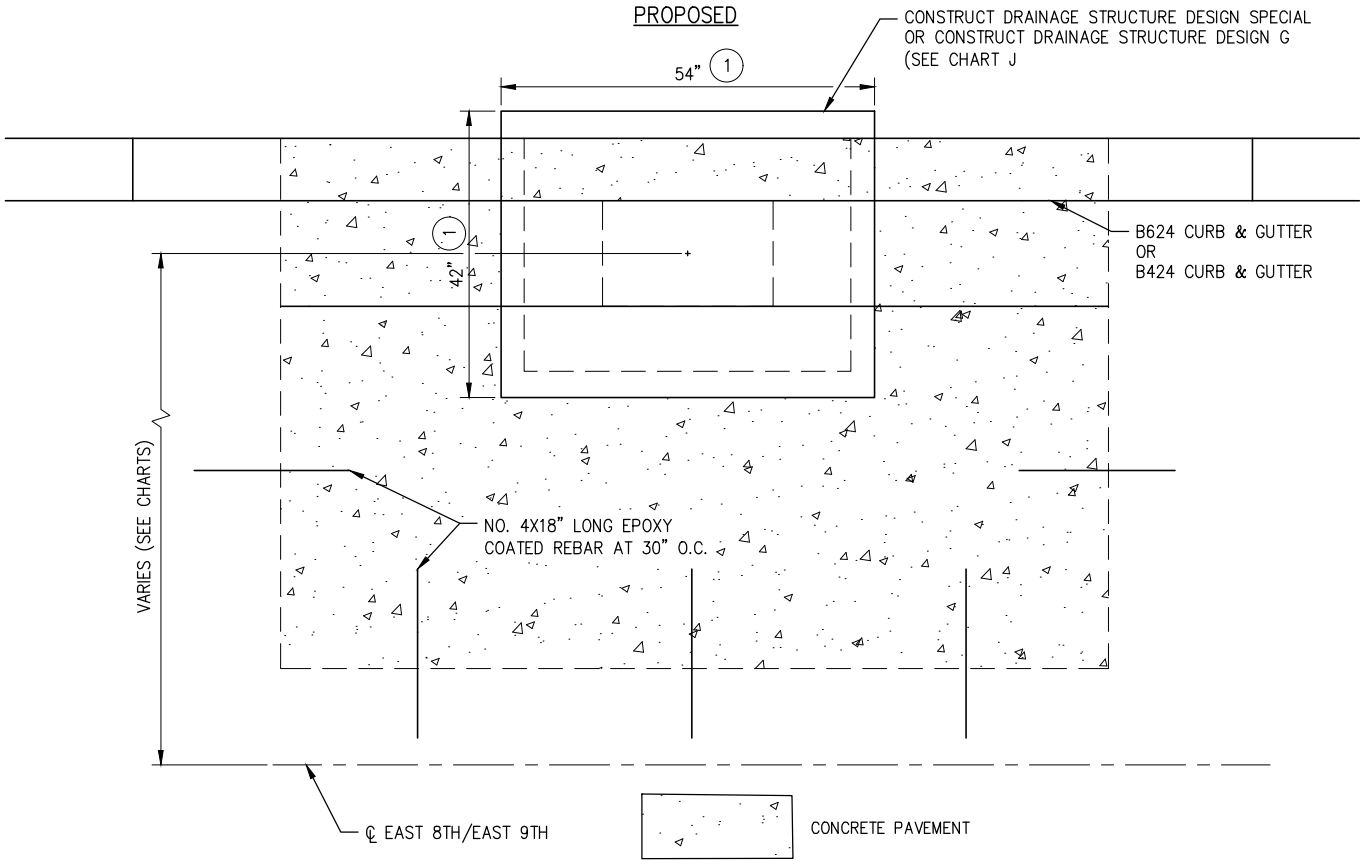
CATCH BASIN REPLACEMENT

N.T.S.

REMOVALS



PROPOSED



KEY NOTE

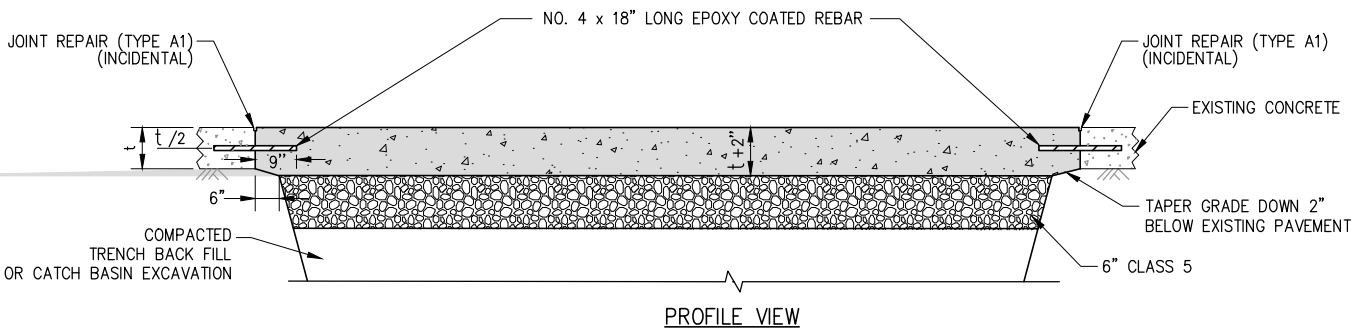
(1) APPLIES TO CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL.

WORK TO BE DONE

1. SAWCUT TO FULL DEPTH.
2. REMOVE CONCRETE PAVEMENT AND CURB & GUTTER.
3. EXCAVATE AND REMOVE EXISTING CATCH BASIN.
4. PLACE PROPOSED CATCH BASIN AND PROVIDE BEDDING AND BACKFILL PER CITY SPECIFICATIONS (2506).
5. PLACE 6" CLASS 5 AGGREGATE BASE
6. DRILL INPLACE CONCRETE PAVEMENT AND CURB & GUTTER FOR NO. 4 EPOXY COATED REINFORCEMENT BARS. FURNISH AND INSTALL EPOXY COATED REINFORCEMENT BARS TO THE INPLACE PAVEMENT USING AN APPROVED NON-SHRINK GROUT OR EPOXY ADHESIVE.
7. PLACE CONCRETE CURB & GUTTER DESIGN B624.
8. CLEAN THE VERTICAL SURFACES OF THE INPLACE CONCRETE. FURNISH AND PLACE CONCRETE MIX 3R52. VIBRATE, FINISH TO GRADE (LESS OVERLAY DEPTH, WHERE APPLICABLE) AND SLOPE, EDGE, TEXTURE AND APPLY CURE. CONCRETE THICKNESS SHALL BE 9" (MINIMUM). MATCH EXISTING.

BASIS OF PAYMENT

- | | |
|--------------------------|---|
| ☐ | 2104 SAWING CONCRETE PAVEMENT (FULL DEPTH) (LIN FT) |
| ☐ | 2104 REMOVE CONCRETE PAVEMENT (SQ YD) |
| ☐ | 2104 REMOVE CATCH BASIN (EACH) |
| ☐ | 2506 CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL (EACH) WITH CASTING SPECIAL OR CONSTRUCT DRAINAGE STRUCTURE G (SEE CHARTS) |
| ☐ | 2211 AGGREGATE BASE (CV) CLASS 5 (CU YD) |
| ☐ | 2302 DRILL AND GROUT REINFORCEMENT BARS (EPOXY COATED) (EACH) |
| ☐ | 2531 CONCRETE CURB & GUTTER DESIGN B624 (LIN FT) OR CONCRETE CURB & GUTTER DESIGN B424 (LIN FT) |
| ☐ | 2301 CONCRETE PAVEMENT (SPECIAL) (SQ YD) |
| ☐ | 2301 STRUCTURAL CONCRETE (SQ YD) |



LHB PROJECT NO. 170650

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Brad Scott
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05/11/2018
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E 9TH/8TH ST RECONDITIONING
CITY PROJECT NO. 0855TR

S.P. 118-134-017

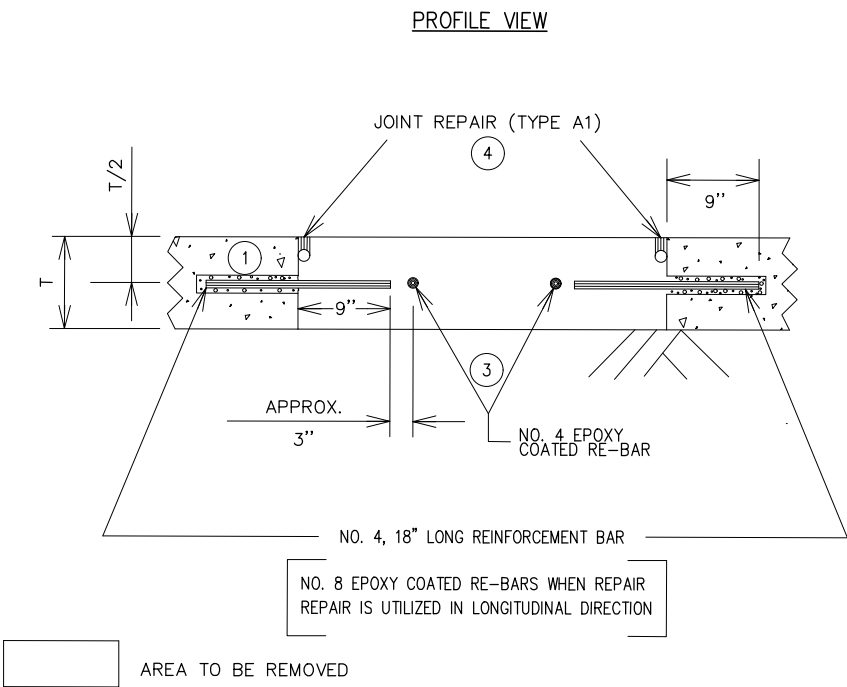
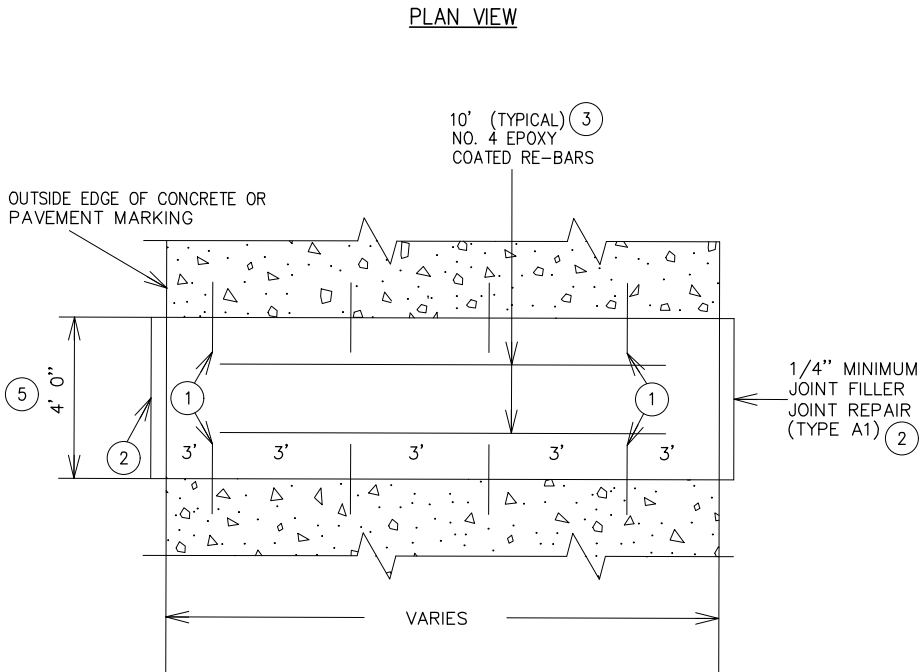
CONSTRUCTION DETAILS

SHEET NO. 36 OF 58 SHEETS

PLOT DATE: 5/14/2018 8:20:57 AM FILE: J:\7Pro\170650\600 Drawings\170650 DBB-Construction Details CB.dwg

FULL DEPTH REPAIR (TYPE CD-HV)

DESCRIPTION: REMOVE CONCRETE, PLACE DOWEL BARS, PLACE REINFORCEMENT BARS, FURNISH AND PLACE CONCRETE, SAW AND SEAL JOINTS.



WORK TO BE DONE

- SAW CUT TO FULL DEPTH AND REMOVE CONCRETE PAVEMENT. RESTORE AND COMPACT IN PLACE BASE.
- DRILL IN PLACE CONCRETE PAVEMENT FOR EPOXY COATED REINFORCEMENT BARS ON LONGITUDINAL REPAIRS.
- FURNISH AND INSTALL DOWELS OR REINFORCEMENT BARS. SECURE THE DOWEL BARS OR REINFORCEMENT BARS TO THE IN PLACE CONCRETE BY USING AN APPROVED NON SHRINK GROUT OR EPOXY ADHESIVE. COAT FREE END OF DOWEL BARS WITH FORM COATING MATERIAL MEETING SPEC 3902.
- CLEAN THE VERTICAL SURFACES OF THE IN PLACE CONCRETE.
- FURNISH AND INSTALL JOINT FILLER.
- FURNISH AND PLACE CONCRETE MIX NUMBER 3R52.
- FURNISH AND INSTALL REINFORCEMENT BARS IN PLASTIC CONCRETE, 3" FROM END OF DOWEL BAR AT MID DEPTH.
- VIBRATE, FINISH TO GRADE AND SLOPE, EDGE, TEXTURE, AND APPLY CURE.
- SAW AND SEAL JOINTS IN ACCORDANCE WITH JOINT REPAIR (TYPE A1) DETAIL. (INCIDENTAL)

BASIS OF PAYMENT

2302 FULL DEPTH REPAIR (TYPE CD-HV) (LIN FT)

NOTE

MEASUREMENT FOR PAYMENT IS MADE ALONG A SINGLE TRANSVERSE SAW CUT.

KEY NOTES:

- DRILL IN PLACE PAVEMENT UTILIZING DRILL BIT(S) WITH A STATED OR MEASURED DIAMETER OF AT LEAST ONE EIGHTH INCH LARGER DIAMETER THAN D&G RE-BAR DIAMETER.
- THIS REPAIR IS ALSO USED ON TIED LONGITUDINAL JOINTS (2' ON EACH SIDE OF THE JOINT.) REPLACE DOWELS WITH 18" LONG NO. 8 EPOXY COATED REINFORCEMENT BARS. FURNISH AND INSTALL REINFORCEMENT BARS (EPOXY COATED) AT 1' CENTERS. INSTALL 1/2" JOINT FILLER AT THE UP AND DOWN STREAM ENDS OF THE LONGITUDINAL REPAIR.
- NO. 4 EPOXY COATED RE-BAR LENGTH IS EQUAL TO THE WIDTH OF THE REPAIR, MINUS 2 FEET.
- IF REPAIR IS PLACED OVER AN EXISTING SKEWED CONTRACTION JOINT, MATCH EXISTING CONTRACTION JOINT SKEW, UNLESS OTHERWISE ALLOWED BY THE ENGINEER.
- IF THIS REPAIR IS PLACED AT A SKEW, THE STANDARD 4 FOOT DIMENSION IS MEASURED PERPENDICULAR FROM THE SAW CUT.

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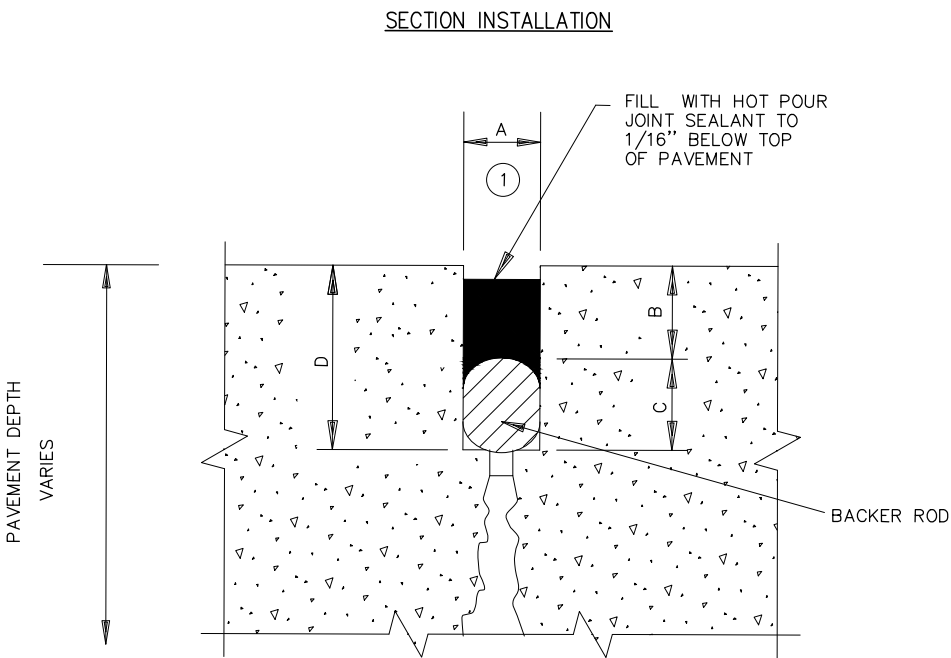
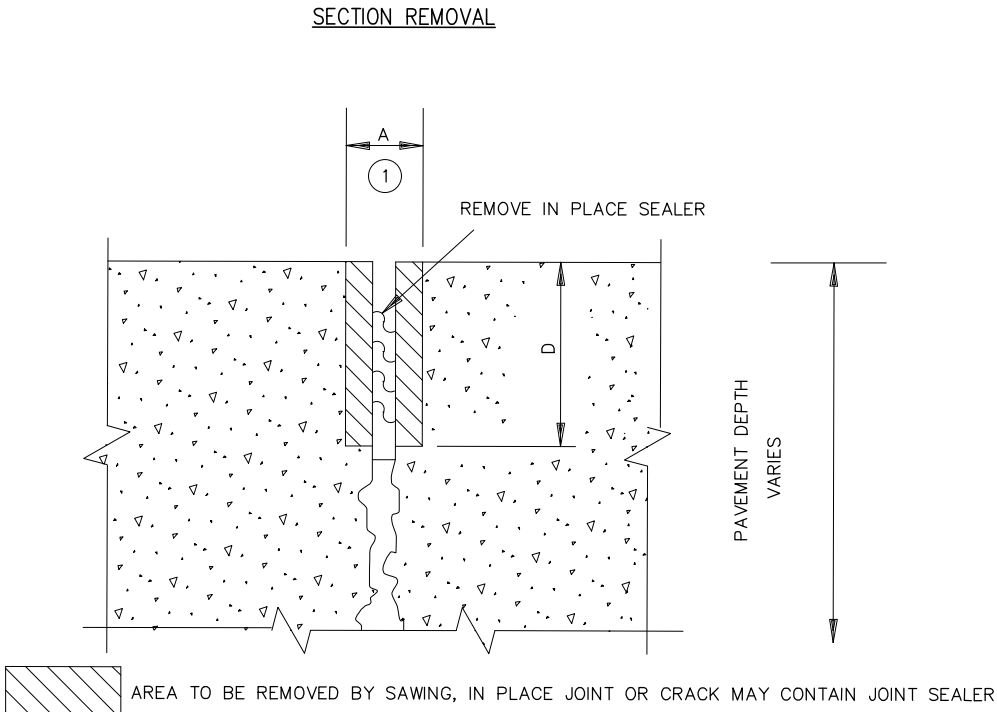
CONSTRUCTION DETAILS

SHEET NO. 37 OF 58 SHEETS

PLOT DATE: 5/14/2018 8:21:07 AM FILE: J:\7PPro\170650\600 Drawings\CONSTRUCTION DETAILS_C3.dwg

VARIABLE WIDTH JOINT CRACK REPAIR / JOINT REPAIR (TYPE A1)

DESCRIPTION: IN NEWLY CONSTRUCTED REPAIRS. SAW, CLEAN, SEAL TRANSVERSE AND / OR LONGITUDINAL PAVEMENT JOINTS OR CRACKS.



KEY NOTES:

- ① ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER THE MAXIMUM RECOMMENDED "A" DIMENSION IS $\frac{3}{8}$ INCH.

WORK TO BE DONE

1. REMOVE IN PLACE JOINT SEALANT, IF APPLICABLE.
2. SAW BOTH JOINT FACES TO CONFIGURATION SHOWN THEN IMMEDIATELY WATER FLUSH THE JOINT OR CRACK.
3. CLEAN AND DRY JOINT OR CRACK BY SANDBLASTING AND AIR BLASTING.
4. FURNISH AND INSTALL BACKER ROD OF APPROPRIATE DIAMETER IN JOINT OR CRACK OPENING. FURNISH AND INSTALL BACKER ROD WHEN JOINTS ARE 1/4" WIDE OR GREATER.
5. FILL JOINT OR CRACK WITH JOINT AND CRACK SEALER (SPECIFICATION 3725 HOT POURED).
6. TO PREVENT TRACKING OF THE JOINT AND CRACK SEALER USE TISSUE PAPER IF NECESSARY.

BASIS OF PAYMENT

INCIDENTAL TO 2302 FULL DEPTH REPAIR (TYPE CD-HV)

JOINT WIDTH (INCHES)	SEALANT BEAD THICKNESS (INCHES)	BACKER ROD DIAMETER (INCHES)	MINIMUM JOINT DEPTH (INCHES)	ESTIMATED QUANTITY	ESTIMATED QUANTITY
A	B	C	D	(FT/GAL)	(LB/LF)
1/4	1/4	3/8	11/16	268	0.035
3/8	3/8	1/2	15/16	119	0.079
1/2	1/2	5/8	1-3/16	67	0.140
5/8	5/8	3/4	1-7/16	43	0.219
3/4	3/4	7/8	1-11/16	30	0.316
7/8	7/8	1.0	1-15/16	22	0.430
1.0	1.0	1-1/8	2-3/16	17	0.562
1-1/8	1-1/8	1-1/4	2-7/16	13	0.711
1-1/4	1-1/4	1-3/8	2-11/16	11	0.877

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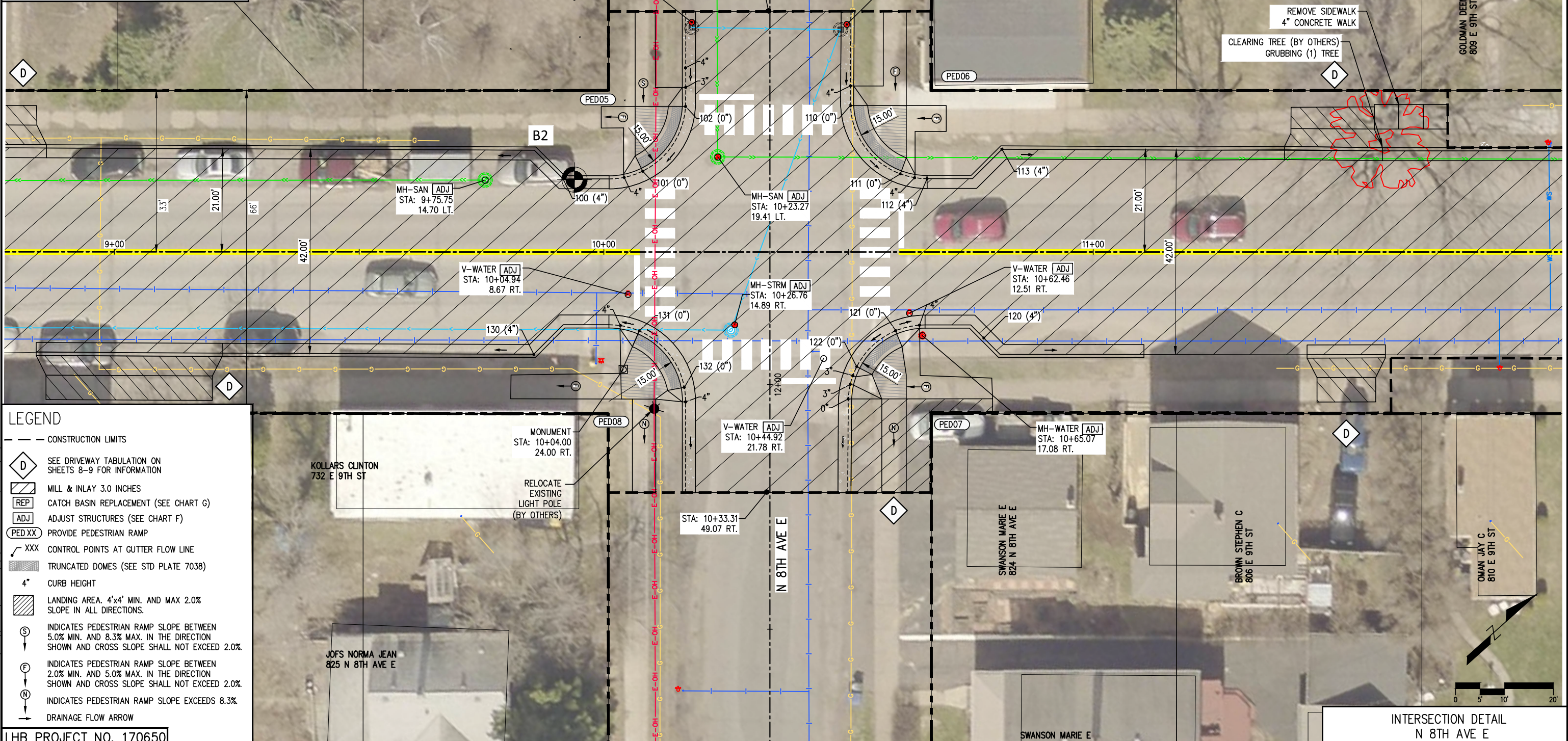
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CONSTRUCTION DETAILS

SHEET NO. 38 OF 58 SHEETS

PLOT DATE: 5/14/2018 8:21:17 AM FILE: J:\7Pro\170650\600 Drawings\170650\068-Construction Details_CB.dwg

RAMP ID	GUTTER CONTROL POINTS			
	POINT NUMBER	X	Y	ELEVATION
PED05	100	4845321.05	3348097.34	944.02
	101	4845330.70	3348110.53	944.71
	102	4845326.63	3348125.88	945.04
PED06	110	4845348.88	3348151.17	945.40
	111	4845366.10	3348149.53	945.03
	112	4845370.45	3348152.96	944.92
PED06	113	4845376.11	3348168.40	944.64
	120	4845402.50	3348139.98	944.20
	121	4845389.43	3348127.53	944.38
PED06	122	4845389.62	3348116.69	944.19
	130	4845343.90	3348069.03	943.15
	131	4845354.63	3348088.31	943.99
	132	4845369.38	3348087.55	943.71



- LEGEND**
- CONSTRUCTION LIMITS
 - D SEE DRIVEWAY TABULATION ON SHEETS 8-9 FOR INFORMATION
 - MILL & INLAY 3.0 INCHES
 - REP CATCH BASIN REPLACEMENT (SEE CHART G)
 - ADJ ADJUST STRUCTURES (SEE CHART F)
 - PEDXX PROVIDE PEDESTRIAN RAMP
 - XXX CONTROL POINTS AT GUTTER FLOW LINE
 - TRUNCATED DOMES (SEE STD PLATE 7038)
 - 4" CURB HEIGHT
 - LANDING AREA, 4'x4' MIN. AND MAX 2.0% SLOPE IN ALL DIRECTIONS.
 - S INDICATES PEDESTRIAN RAMP SLOPE BETWEEN 5.0% MIN. AND 8.3% MAX. IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.
 - F INDICATES PEDESTRIAN RAMP SLOPE BETWEEN 2.0% MIN. AND 5.0% MAX. IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.
 - N INDICATES PEDESTRIAN RAMP SLOPE EXCEEDS 8.3%.
 - DRAINAGE FLOW ARROW

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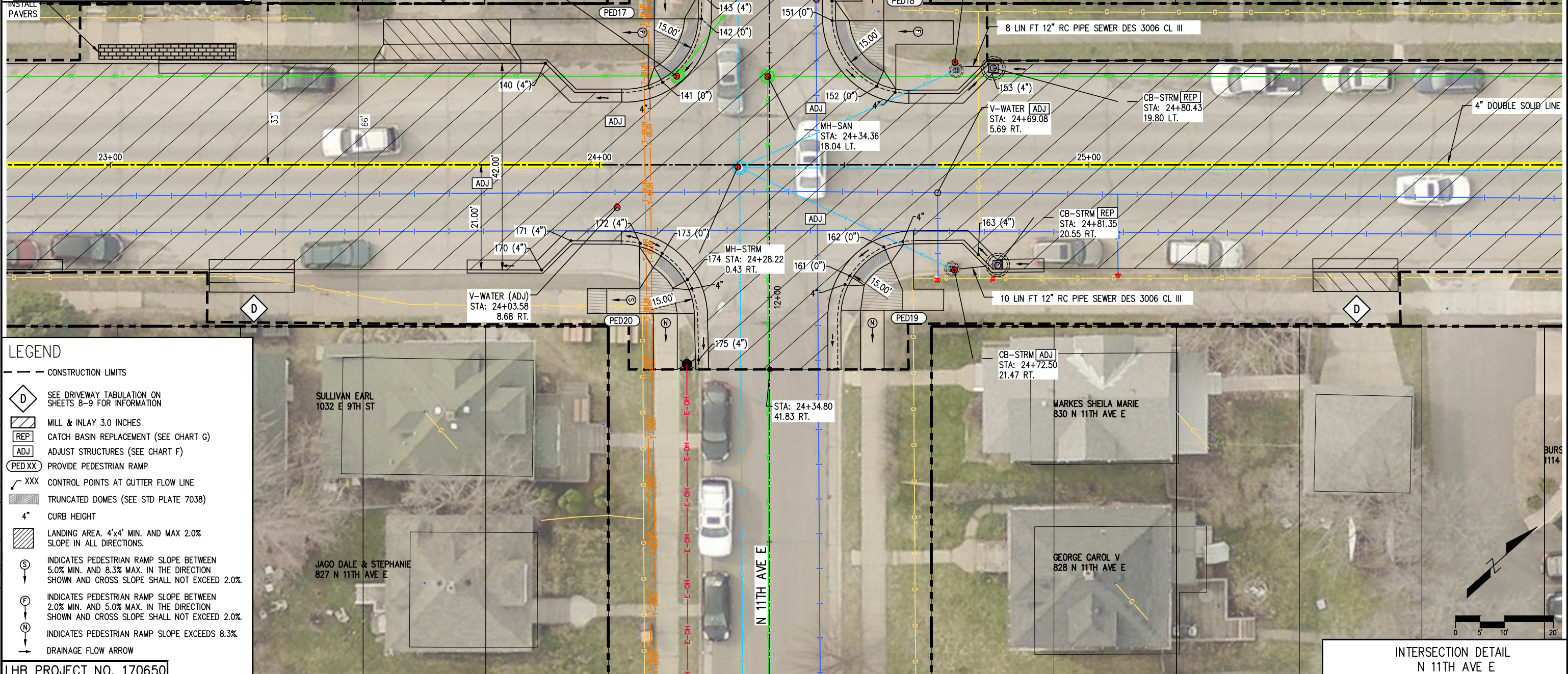
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INTERSECTION DETAIL
N 8TH AVE E

CONSTRUCTION DETAILS

SHEET NO. 39 OF 58 SHEETS

RAMP ID	GUTTER CONTROL POINTS			
	POINT NUMBER	X	Y	ELEVATION
PED17	140	4846244.80	3349145.71	945.30
	141	4846263.64	3349161.01	946.03
	142	4846259.21	3349175.55	946.31
	143	4846255.52	3349178.87	946.40
PED18	150	4846274.22	3349197.91	946.50
	151	4846277.23	3349195.29	946.43
	152	4846293.30	3349193.16	946.16
PED19	161	4846318.62	3349163.33	945.04
	162	4846318.84	3349172.48	945.15
	163	4846332.83	3349185.84	945.47
PED20	170	4846275.90	3349117.03	944.70
	171	4846275.40	3349125.48	945.15
	172	4846285.24	3349135.72	945.22
	173	4846289.76	3349137.79	945.12
	174	4846297.21	3349138.01	944.97
	175	4846310.98	3349128.80	942.99



LEGEND

- CONSTRUCTION LIMITS
- D SEE DRIVEWAY TABULATION ON SHEETS 8-9 FOR INFORMATION
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- ADJ ADJUST STRUCTURES (SEE CHART F)
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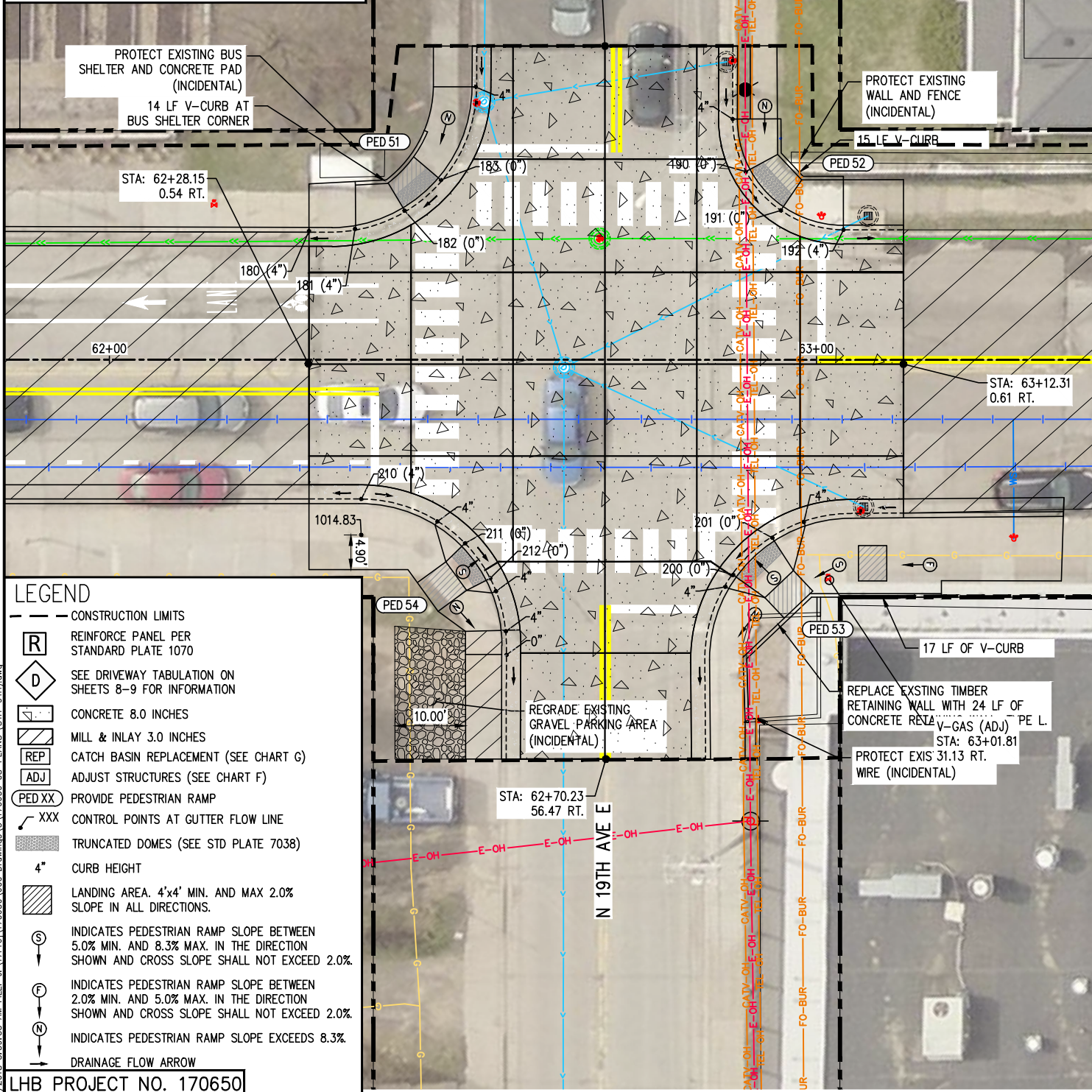
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INTERSECTION DETAIL
N 11TH AVE E

CONSTRUCTION DETAILS

SHEET NO. 40 OF 58 SHEETS

RAMP ID	GUTTER CONTROL POINTS			
	POINT NUMBER	X	Y	ELEVATION
PED51	180	4849000.83	3351693.12	1015.29
	181	4849004.93	3351698.18	1015.49
	182	4849007.67	3351705.15	1015.67
	183	4849007.83	3351711.87	1015.80
PED52	190	4849035.59	3351744.89	1016.17
	191	4849042.98	3351744.94	1016.02
	192	4849050.92	3351749.75	1015.52
PED53	200	4849077.05	3351705.67	1014.64
	201	4849076.79	3351713.29	1014.79
PED54	210	4849034.08	3351673.48	1014.75
	211	4849048.51	3351680.29	1014.20
	212	4849054.59	3351679.66	1014.07



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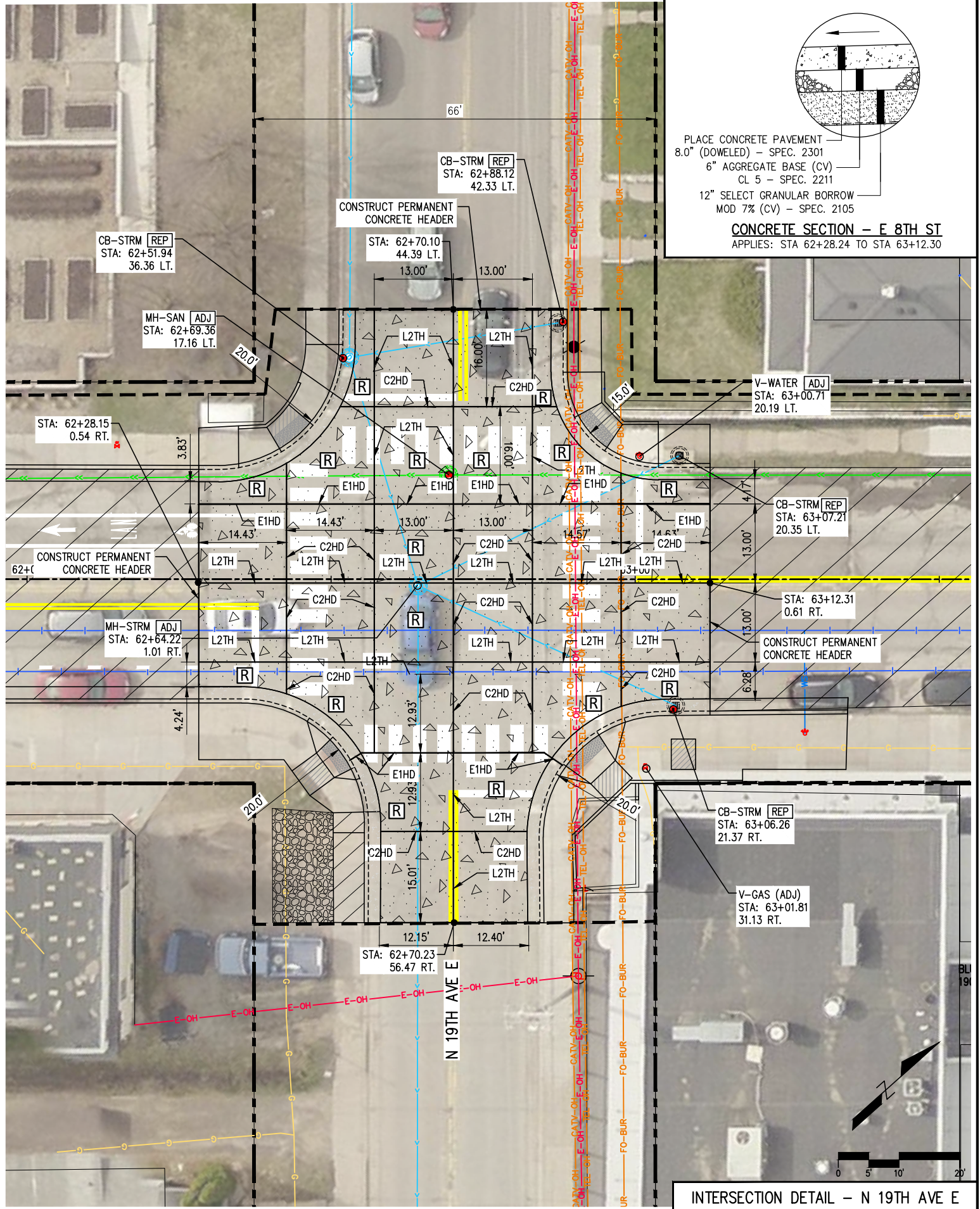
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PLACE CONCRETE PAVEMENT
8.0" (DOWELED) - SPEC. 2301
6" AGGREGATE BASE (CV)
CL 5 - SPEC. 2211
12" SELECT GRANULAR BORROW
MOD 7% (CV) - SPEC. 2105
CONCRETE SECTION - E 8TH ST
APPLIES: STA 62+28.24 TO STA 63+12.30

INTERSECTION DETAIL - N 19TH AVE E

CONSTRUCTION DETAILS

SHEET NO. 41 OF 58 SHEETS

TRAFFIC CONTROL NOTES

1.

THE CONTRACTOR SHALL FURNISH, INSTALL AND MAINTAIN THE DEVICES IN THIS TRAFFIC CONTROL PLAN UNLESS OTHERWISE NOTED.
2.

ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD) INCLUDING "MINNESOTA TEMPORARY TRAFFIC CONTROL FIELD MANUAL" DATED JANUARY 2018. (<http://www.dot.state.mn.us/trafficeng/publ/fieldmanual/index.html>)
3.

FIELD CONDITIONS MAY REQUIRE MODIFICATIONS OF THIS LAYOUT AS DEEMED NECESSARY BY THE ENGINEER.
4.

THE NUMBER AND PLACEMENT OF TRAFFIC CONTROL DEVICES WILL DEPEND UPON THE SEQUENCE OF THE CONTRACTOR'S OPERATION.
5.

ALL DISTANCES DICTICED ARE APPROXIMATE.
6.

THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ANY WORK AREAS NEAR TRAFFIC IN ACCORDANCE WITH THE MMUTCD.
7.

IF THE CONTRACTOR DECIDES TO PERFORM THE CONSTRUCTION WORK IN A SEQUENCE OTHER THAN SHOWN IN THIS TRAFFIC CONTROL PLAN, THE CONTRACTOR SHALL PROVIDE COMPLETE REVISED TRAFFIC CONTROL PLANS TO BE APPROVED BY THE ENGINEER.
8.

ALL TRAFFIC CONTROL DEVICES, INCLUDING OVERHEAD SIGNS ON ROADS OPEN TO TRAFFIC THAT ARE NOT CONSISTENT WITH TRAFFIC OPERATION, SHALL BE COVERED, REMOVED OR REVISED AS DIRECTED BY THE ENGINEER.
9.

"ROAD WORK AHEAD" SIGNS SHALL BE MOUNTED APPROX. 300 FT (1 BLOCK) IN ADVANCE OF THE CONSTRUCTION AND SHALL HAVE A TYPE "A" LOW INTENSITY FLASHING AMBER WARNING LIGHT MOUNTED ON THEM.
10.

"ROAD CLOSED AHEAD" SIGNS SHALL BE ERECTED APPROX. 300 FT (1 BLOCK) IN ADVANCE OF THE CLOSURE.
11.

"ROAD CLOSED TO THRU TRAFFIC" SIGNS SHALL BE INSTALLED ON TYPE III BARRICADES AND SHALL BE LOCATED AT A POINT IN THE STREET AS TO PERMIT LOCAL TRAFFIC USE BUT EFFECTIVELY DISCOURAGE THRU TRAFFIC USE.
12.

WHEN A "ROAD CLOSED TO THRU TRAFFIC" SIGN IS USED, THE "STOP" OR "YIELD" SIGN AT THAT INTERSECTION SHALL BE LEFT IN PLACE OR MOVED TO A SUITABLE LOCATION WHERE THE DRIVER CAN STILL SEE THE SIGN.
13.

"ROAD CLOSED" SIGNS MAY BE USED WHERE THE ROADWAY IS CLOSED TO ALL TRAFFIC EXCEPT CONTRACTOR'S EQUIPMENT OR OFFICIALLY AUTHORIZED VEHICLES.
14.

TYPE "A" LOW INTENSITY AMBER WARNING LIGHTS SHALL BE MOUNTED ON ALL ADVANCE WARNING SIGNS AND ON ALL TYPE I AND TYPE III BARRICADES WHEN USED AT NIGHT OR TO IDENTIFY HAZARDS.
15.

ADDITIONAL SIGNING MAY BE REQUIRED FOR SEPARATE LANE CLOSURES. THE SIGNING SHALL BE IN CONFORMANCE WITH "MINNESOTA TEMPORARY TRAFFIC CONTROL FIELD MANUAL" DATED JANUARY 2018 AND SHALL BE CONSIDERED INCIDENTAL.
16.

THE CONTRACTOR SHALL PLACE DRUMS THROUGHOUT THE PROJECT TO DELINEATE HAZARDOUS AREAS AND FACILITATE DAY-TO-DAY CHANNELIZATION OF TRAFFIC (INCIDENTAL).

TRAFFIC CONTROL STAGING

1.

ALL MILLING AND OVERLAY WORK SHALL BE COMPLETED WHILE MAINTAINING TWO-WAY TRAFFIC AND UTILIZING FLAGGERS PER LAYOUT 16 IN THE FIELD MANUAL. SEE SHEET 6K-16.
2.

ALL CURB AND GUTTER, ADA, AND DRIVEWAY WORK SHALL BE COMPLETED WHILE MAINTAINING TWO-WAY TRAFFIC SEE SHEET 46.

ESTIMATED QUANTITIES			
SIGN NO.	MESSAGE	SIZE	NO. REQ'D
D SIGNS			
D3-1	N 19th Av E	2.5 FT X 1 FT	11
D3-1	E 8th St	2.5 FT X 1 FT	10
M SIGNS			
M4-8a	END DETOUR	2 FT X 1.5 FT	20
M4-9mbT	DETOUR ↑	2.5 FT X 2 FT	16
M4-9mbL	DETOUR ←	2.5 FT X 2 FT	12
M4-9mbR	DETOUR →	2.5 FT X 2 FT	12
M4-9L	DETOUR ←	2.5 FT X 2 FT	8
M4-9R	DETOUR →	2.5 FT X 2 FT	9
M4-9T	DETOUR ↑	2.5 FT X 2 FT	4

ESTIMATED QUANTITIES			
SIGN NO.	MESSAGE	SIZE	NO. REQ'D
R SIGNS			
R9-9	SIDEWALK CLOSED	2.5 FT X 1.5 FT	16
R9-10	SIDEWALK CLOSED ← USE OTHER SIDE →	2 FT X 1 FT	8
R9-11L	SIDEWALK CLOSED AHEAD ← CROSS HERE	2 FT X 1 FT	4
R9-11R	SIDEWALK CLOSED AHEAD → CROSS HERE	2 FT X 1 FT	4
R11-2	ROAD CLOSED	4 FT X 2.5 FT	4
R11-4	ROAD CLOSED TO THRU TRAFFIC	5 FT X 2.5 FT	4
W SIGNS			
W1-4L	↶	3 FT X 3 FT	2
W1-4R	↷	3 FT X 3 FT	2
W1-6L	←	3 FT X 3 FT	2
W1-6R	→	3 FT X 3 FT	2
W8-1	BUMP ↙	3 FT X 3 FT	2
W8-23	NO SHOULDER	3 FT X 3 FT	2
W20-1	ROAD WORK AHEAD	3 FT X 3 FT	40
W20-3	ROAD CLOSED AHEAD	3 FT X 3 FT	6
W20-X5	BE PREPARED TO STOP	3 FT X 3 FT	2
W20-7A	⚠	3 FT X 3 FT	2

ESTIMATED QUANTITIES			
SIGN NO.	MESSAGE	SIZE	NO. REQ'D
WEIGHTED CHANNELIZER	↑		156
TYPE 2 LEFT	↔		16
TYPE 2 RIGHT	↔		16
TYPE 3 LEFT	↔		10
TYPE 3 RIGHT	↔		10
⚡	FLASHING AMBER WARNING LIGHTS		70

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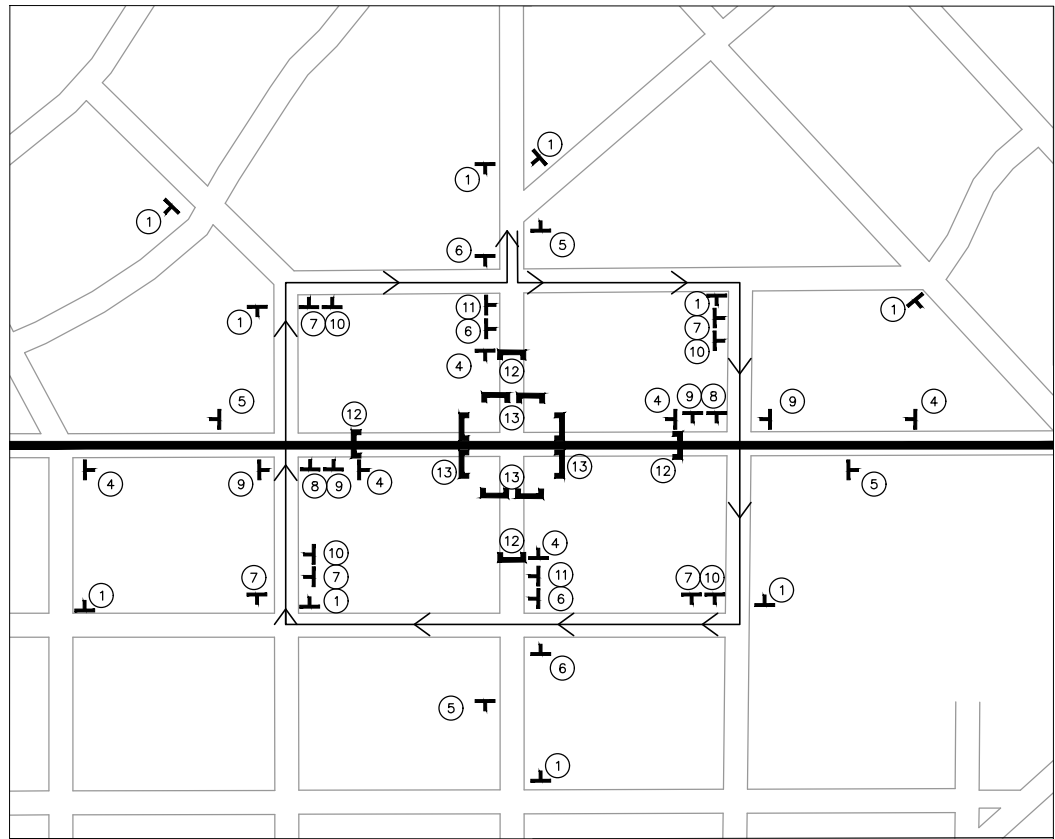
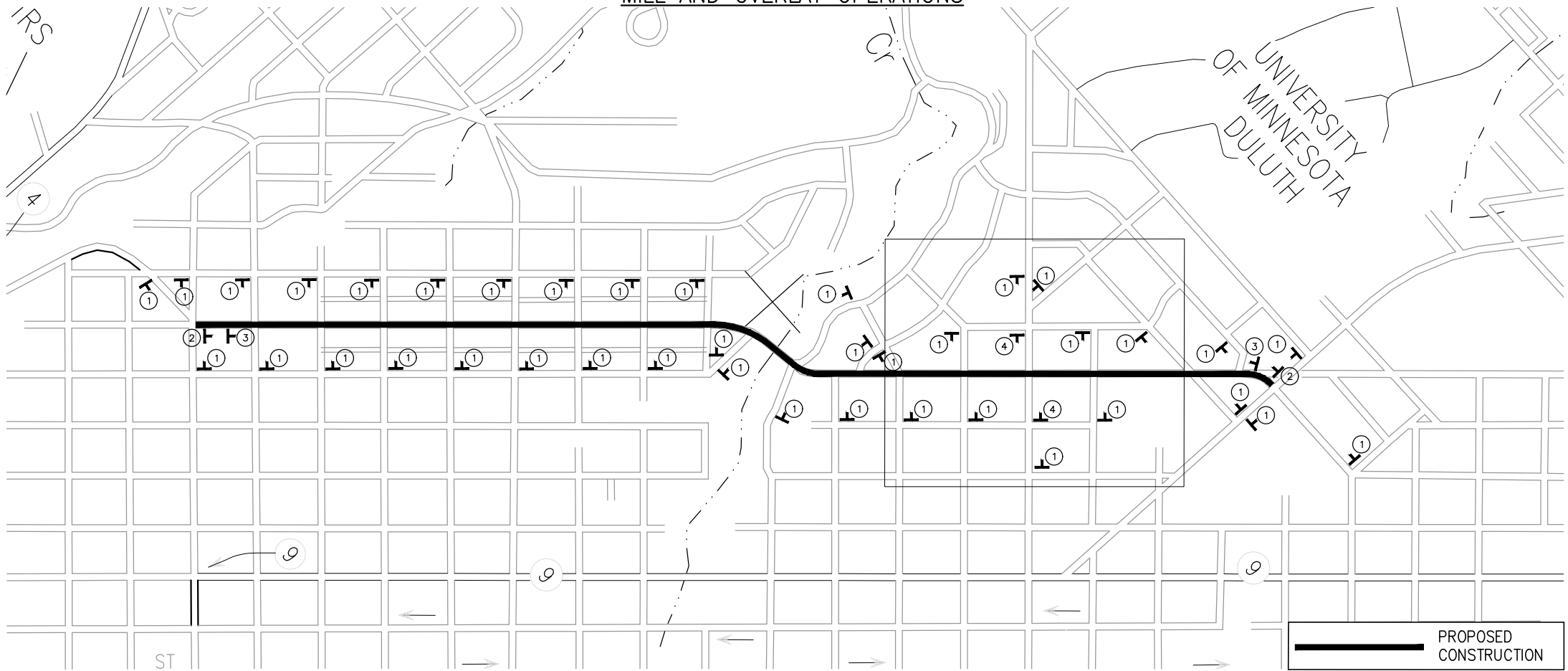
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TRAFFIC CONTROL PLAN

SHEET NO. 42 OF 58 SHEETS

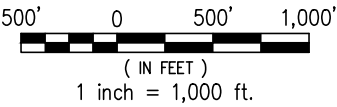
MILL AND OVERLAY OPERATIONS



N 19TH AVE ROAD CLOSURE

TRAFFIC SIGN LEGEND

PLAN SYMBOL	DESCRIPTION	PLAN SYMBOL	DESCRIPTION
	SINGLE POST SIGNAGE		SINGLE POST SIGNAGE
(1)		(7)	
(2)		(8)	
(3)		(9)	
(4)		(10)	
(5)		(11)	
(6)			DOUBLE POST SIGNAGE
	DOUBLE POST SIGNAGE	(13)	
(12)			



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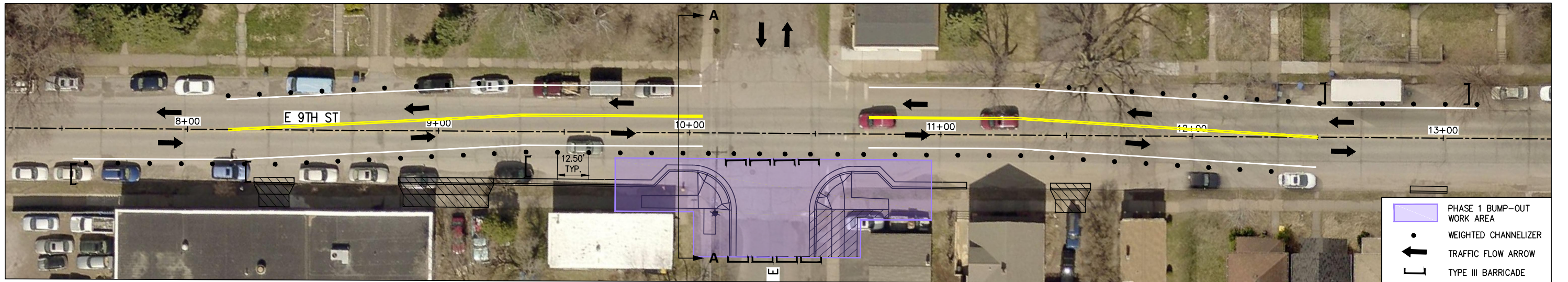
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N 19TH AVE E DETOUR PLAN

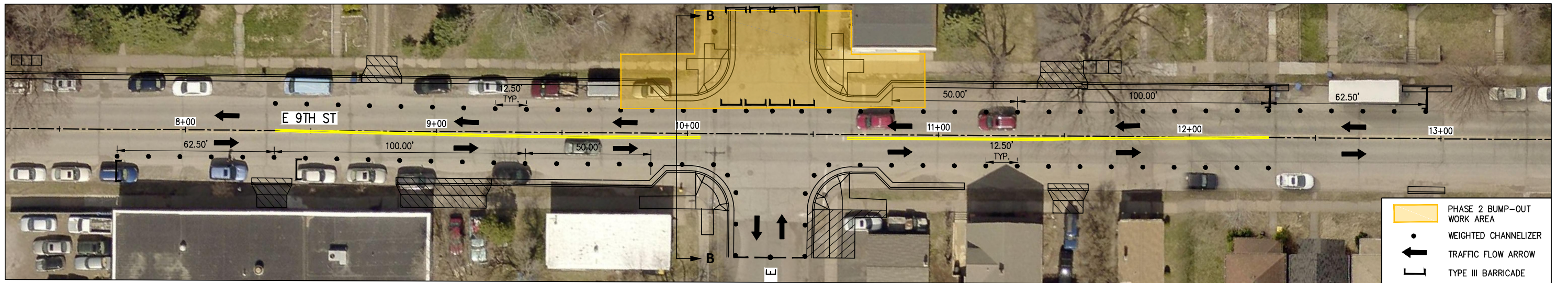
TRAFFIC CONTROL PLAN

SHEET NO. 43 OF 58 SHEETS



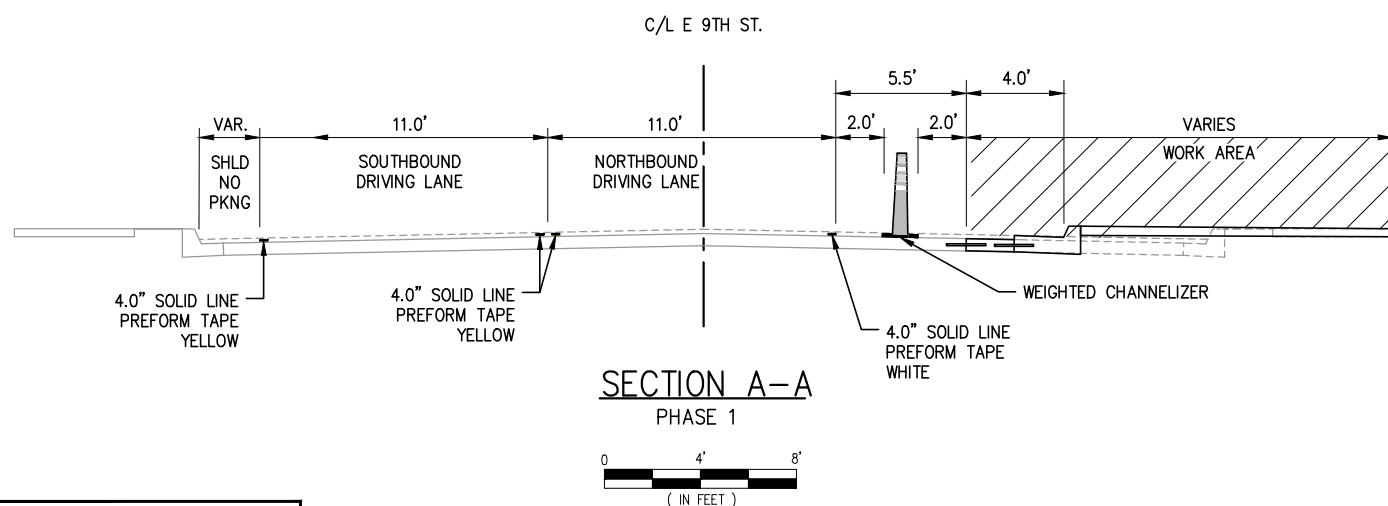
BUMP-OUT CONSTRUCTION PHASE 1 TRAFFIC CONTROL

APPLIES: N 8TH AVE E & 9TH ST E INTERSECTION
N 11TH AVE E & 9TH ST E INTERSECTION

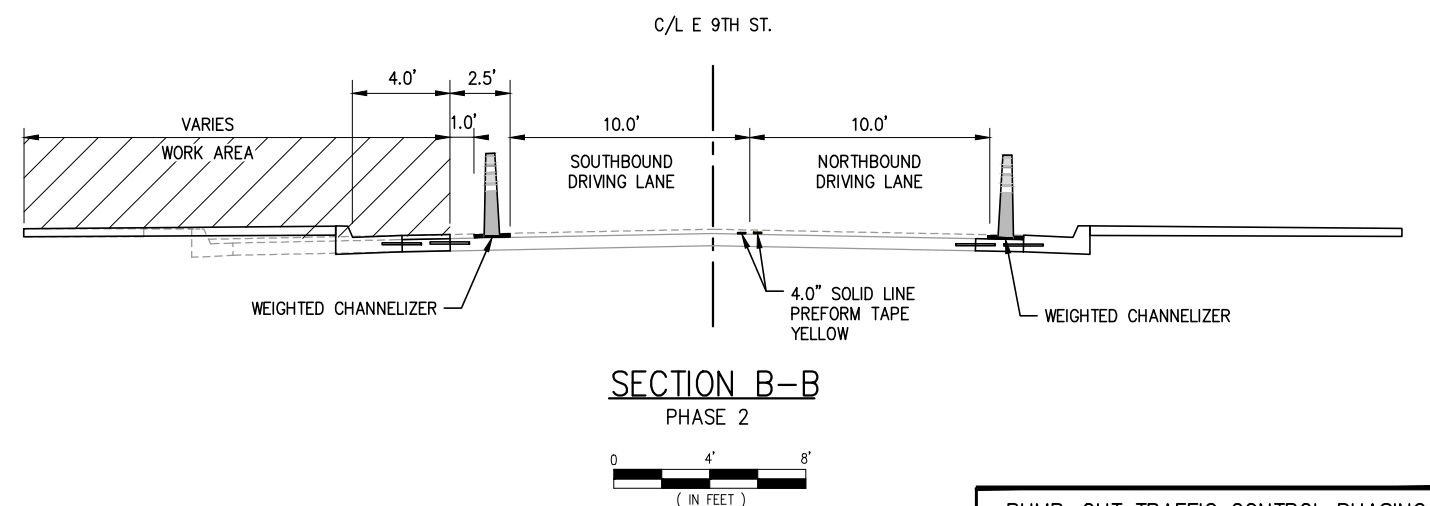


BUMP-OUT CONSTRUCTION PHASE 2 TRAFFIC CONTROL

APPLIES: N 8TH AVE E & 9TH ST E INTERSECTION
N 11TH AVE E & 9TH ST E INTERSECTION



SECTION A-A
PHASE 1



SECTION B-B
PHASE 2

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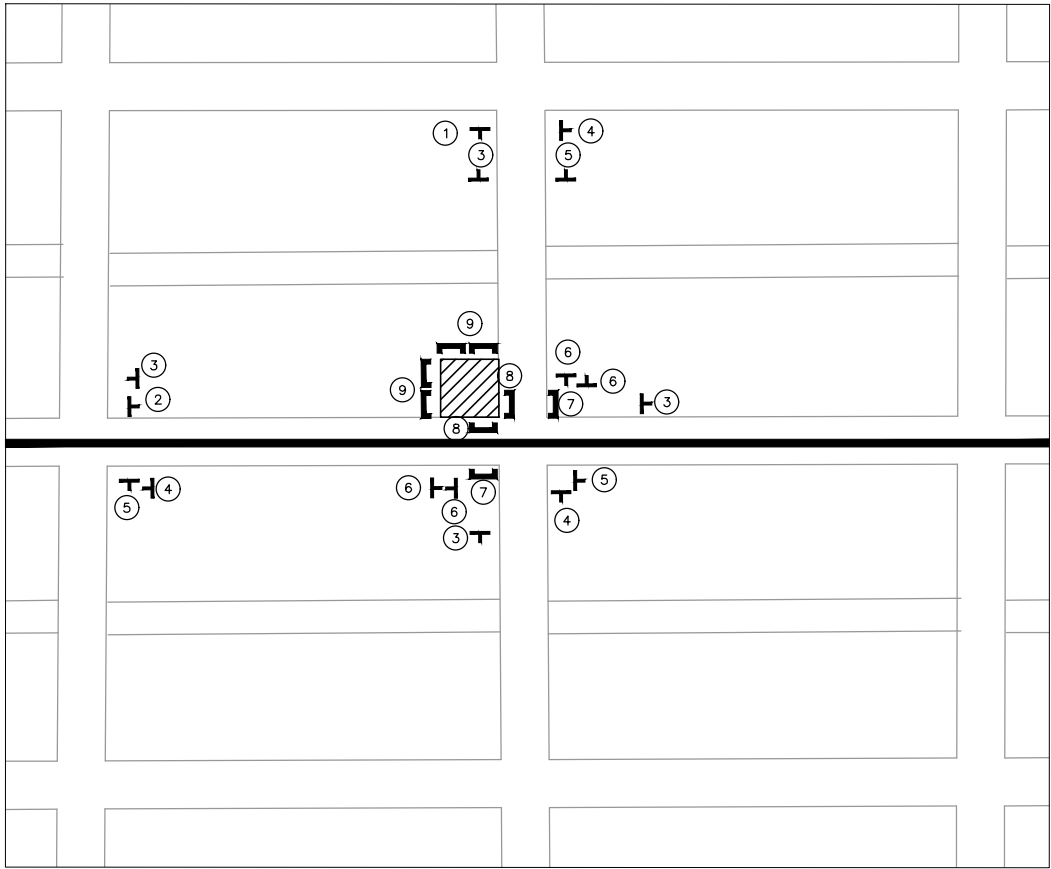
S.P. 118-134-017

BUMP-OUT TRAFFIC CONTROL PHASING

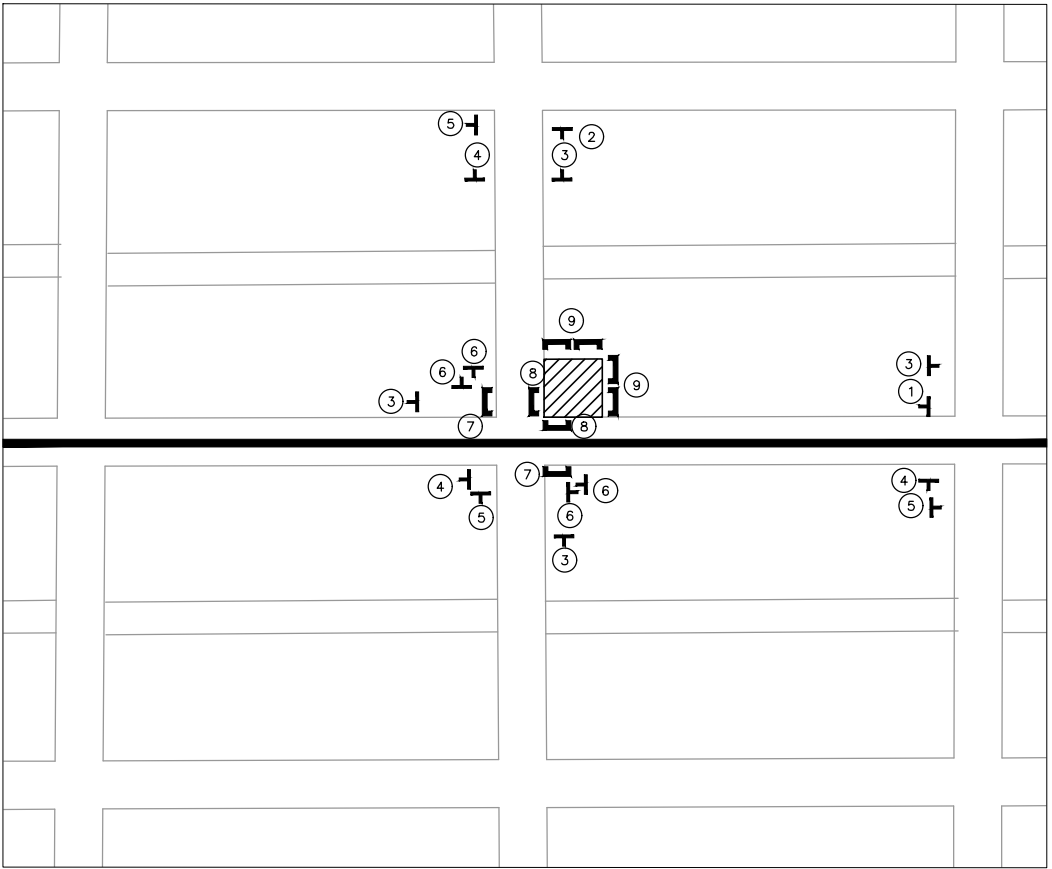
TRAFFIC CONTROL PLAN

SHEET NO. 44 OF 58 SHEETS

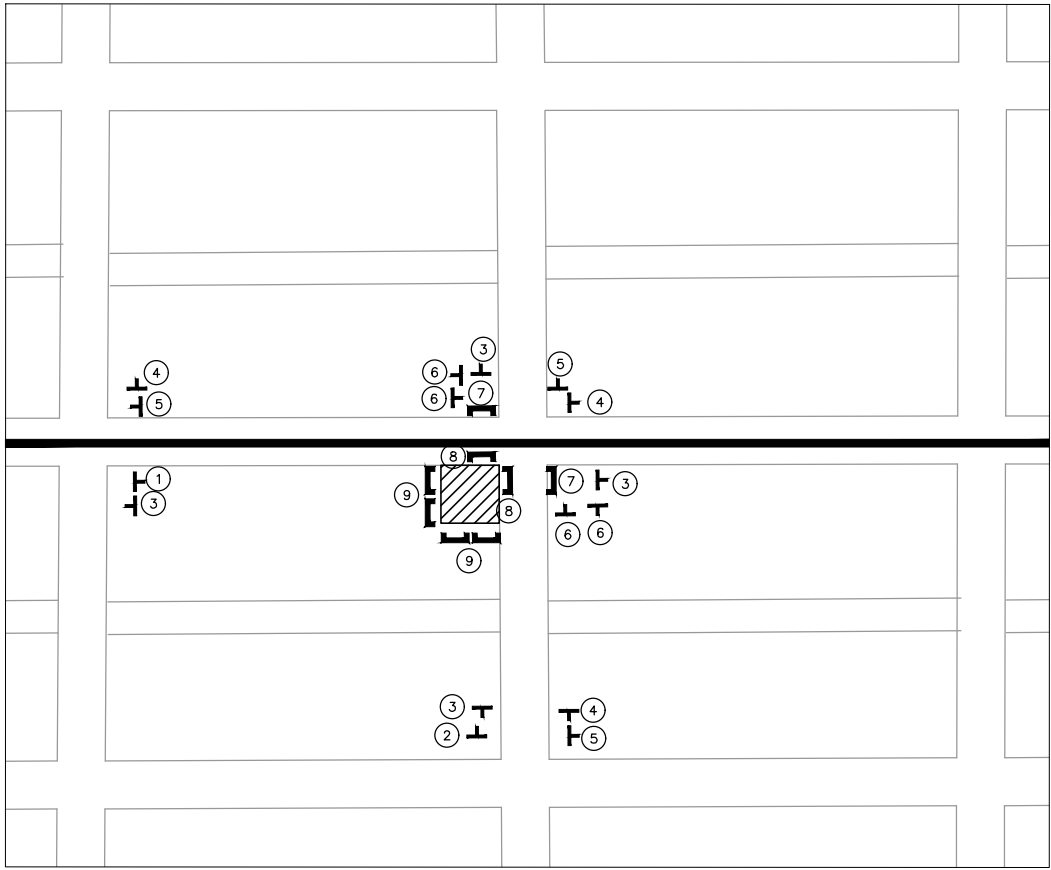
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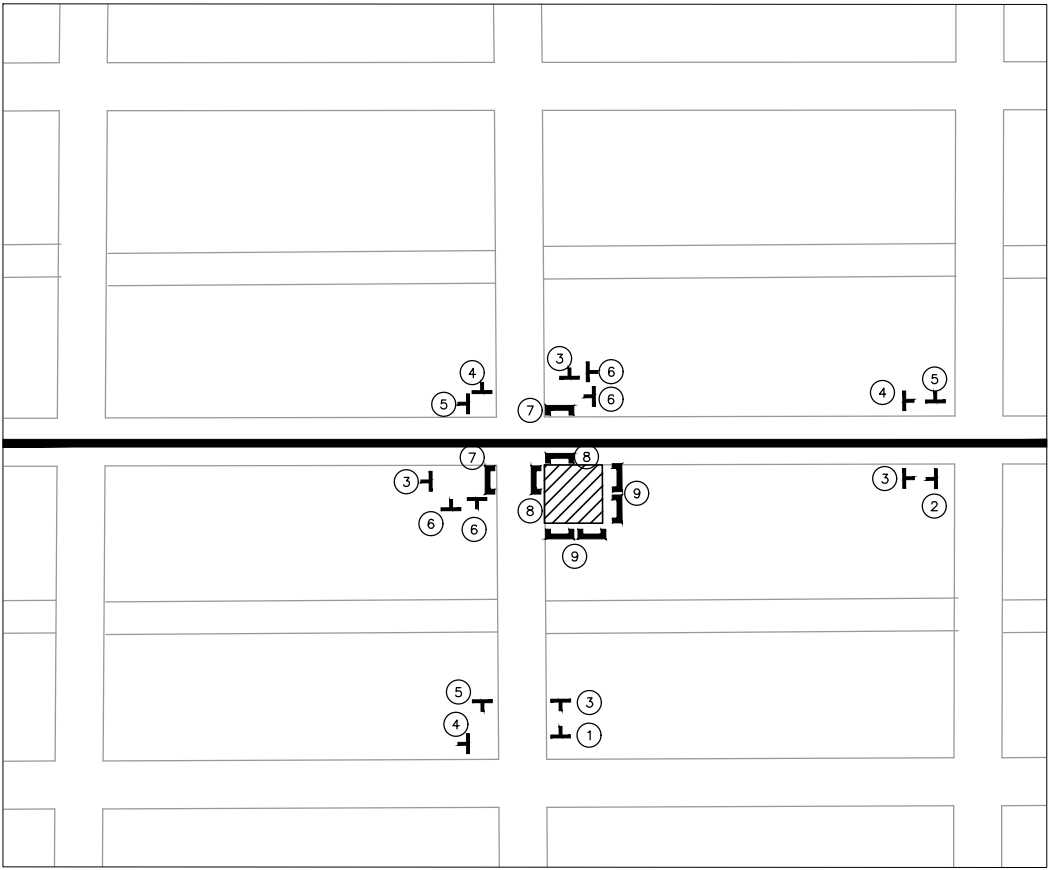
QUADRANT I



QUADRANT II



QUADRANT III



QUADRANT IV

TRAFFIC SIGN LEGEND	
PLAN SYMBOL	DESCRIPTION
	SINGLE POST SIGNAGE
①	
②	
③	
④	
⑤	
⑥	
	DOUBLE POST SIGNAGE
⑦	
⑧	
⑨	
E 9TH/8TH ST	
ADA RAMP CONSTRUCTION AREA	



LHB PROJECT NO. 170650

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BRAD SCOTT
PRINTED NAME

SIGNATURE

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T.P.A.R. DETOUR FOR ADA QUADRANTS

TRAFFIC CONTROL PLAN

SHEET NO. 45 OF 58 SHEETS

WORK SPACE OCCUPIES ONE HALF OF ROAD
TWO LANE TWO WAY ROAD 40 MPH OR LESS
LONG TERM

1/26/18 LAYOUT 49

LHB PROJECT NO. 170650

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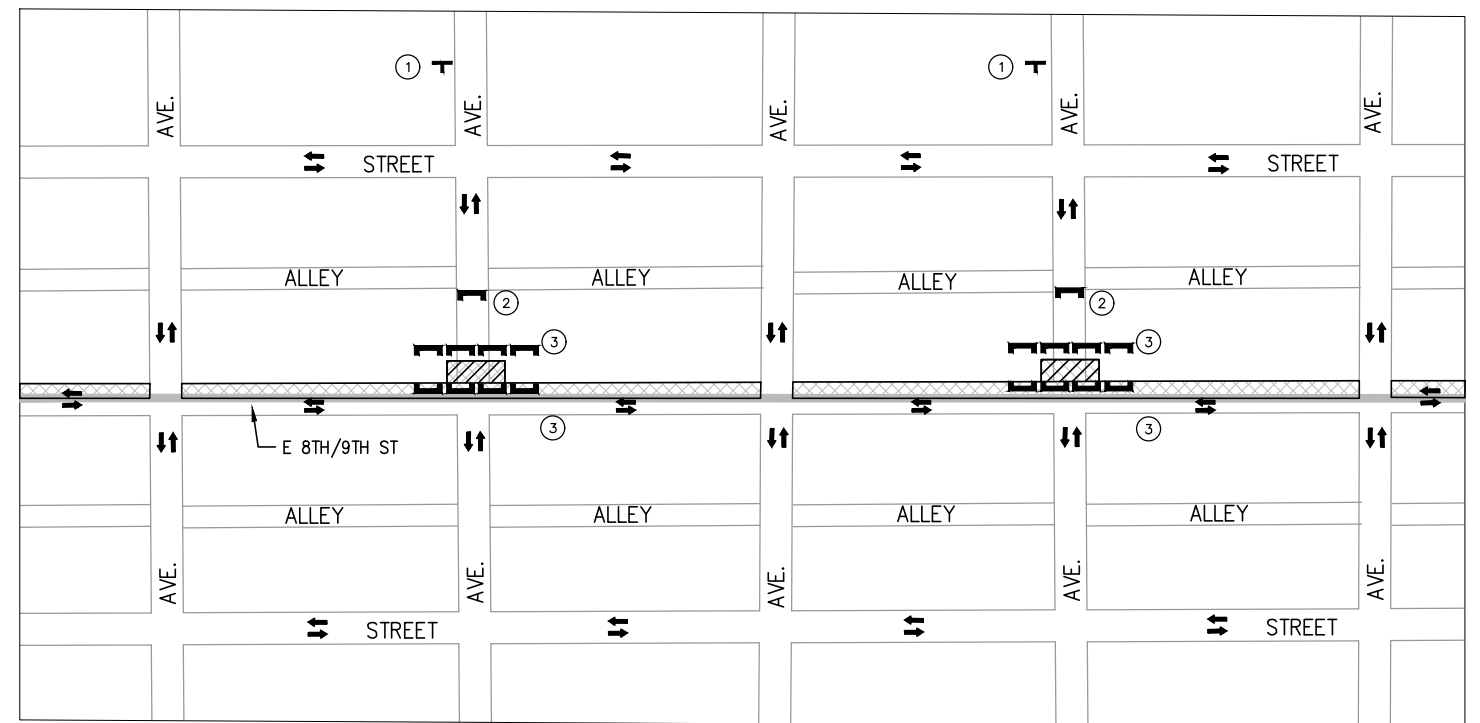
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TYPICAL CURB REPLACEMENT AND ADA TRAFFIC CONTROL

POSTED SPEED LIMIT PRIOR TO WORK STARTING	SPACING OF CHANNELIZING DEVICES (G)	SPACING OF ADVANCE WARNING SIGNS (A)	DECISION SIGHT DISTANCE	TAPER LENGTH (L)	BUFFER SPACE (B)
(MPH)	FEET	FEET	FEET	FEET	FEET
0 – 30	25	100	550	200	200

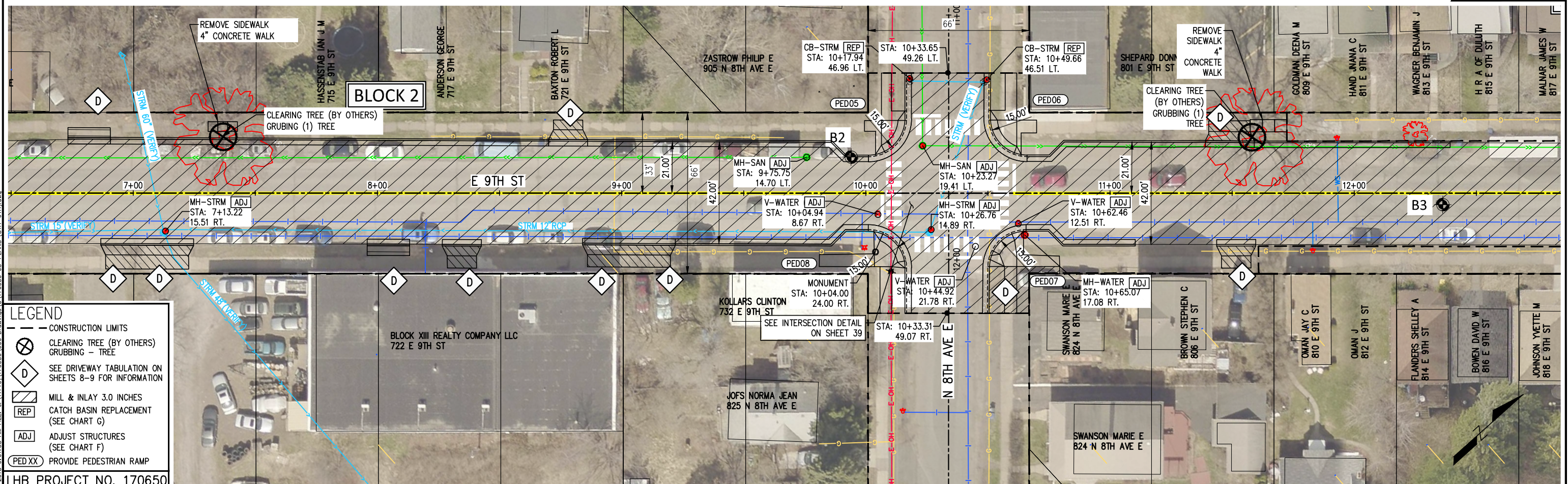
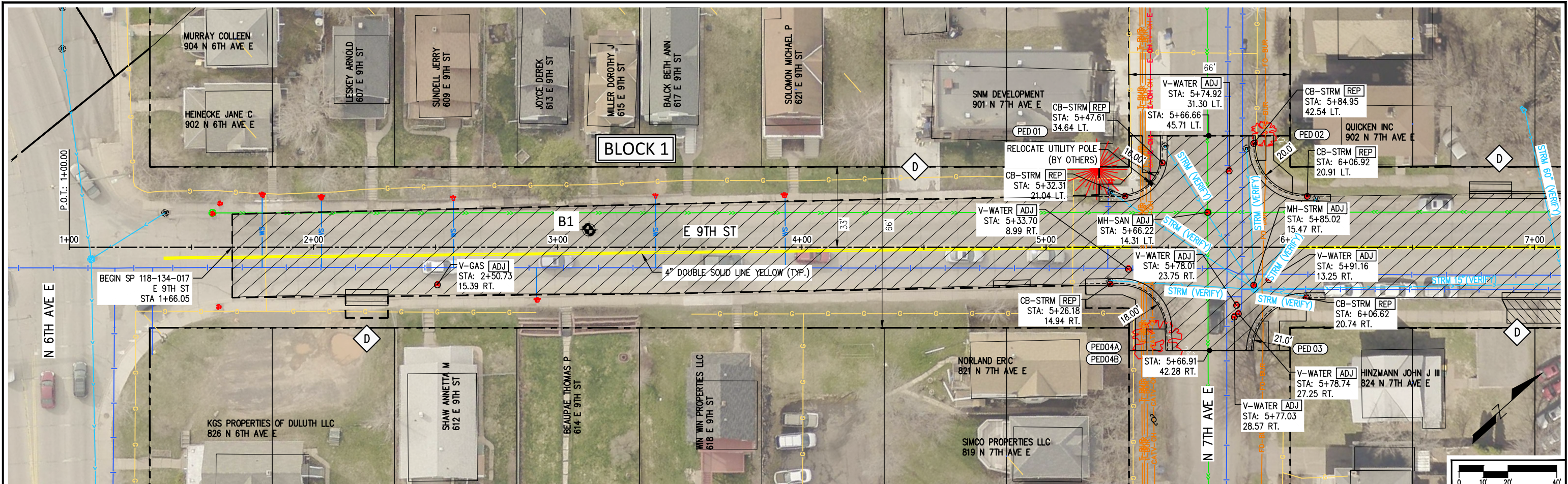
TRAFFIC CONTROL NOTES

1. CONTRACTOR SHALL STAGE ADA WORK AND ALTERNATE AVENUE CLOSURES SUCH THAT NO ADJACENT AVENUES ARE CLOSED AT THE SAME TIME.
2. APPLY TRAFFIC CONTROL LAYOUT 49 DURING CONSTRUCTION OF CURBS, DRIVEWAYS, AND ADA IMPROVEMENTS. WORK SHALL BE STAGED SUCH THAT CONSTRUCTION ACTIVITIES ARE COMPLETED ON ONE SIDE BEFORE WORK SHALL BEGIN ON OPPOSITE SIDE.
3. PARKING AND STOPPING IS PROHIBITED ALONG THE WORK SPACE AND TAPER.
4. THE MINIMUM PAVED LANE WIDTH FROM THE CHANNELIZING DEVICES TO THE EDGE OF PAVEMENT OR OUTSIDE EDGE OF THE SHOULDER SHALL BE 10 FT.
5. REMOVE CONFLICTING MARKINGS.

- | | |
|---|--|
|  | 4" SOLID YELLOW
REMOVABLE PREFORMED
PLASTIC MARKING |
|  | 4" SOLID WHITE
REMOVABLE PREFORMED
PLASTIC MARKING |
|  | 4" DOUBLE YELLOW
REMOVABLE PREFORMED
PLASTIC MARKING |
|  | DRUMS, TYPE I OR TYPE II
BARRICADE OR VERTICAL PANEL. |
|  | SURFACE MOUNTED DELINEATOR |
|  | SOLID LINE PAVEMENT MARKING
WITH TEMPORARY RAISED PAVEMENT
MARKERS AT 10' SPACING OR
WET REFLECTIVE TAPE. |

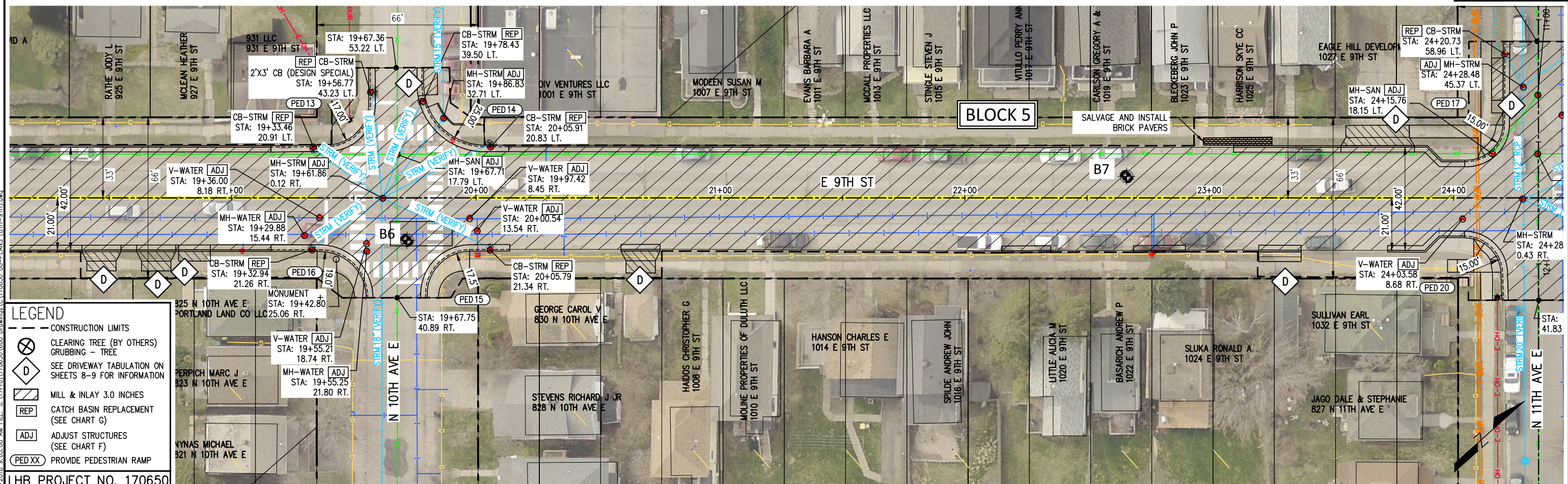
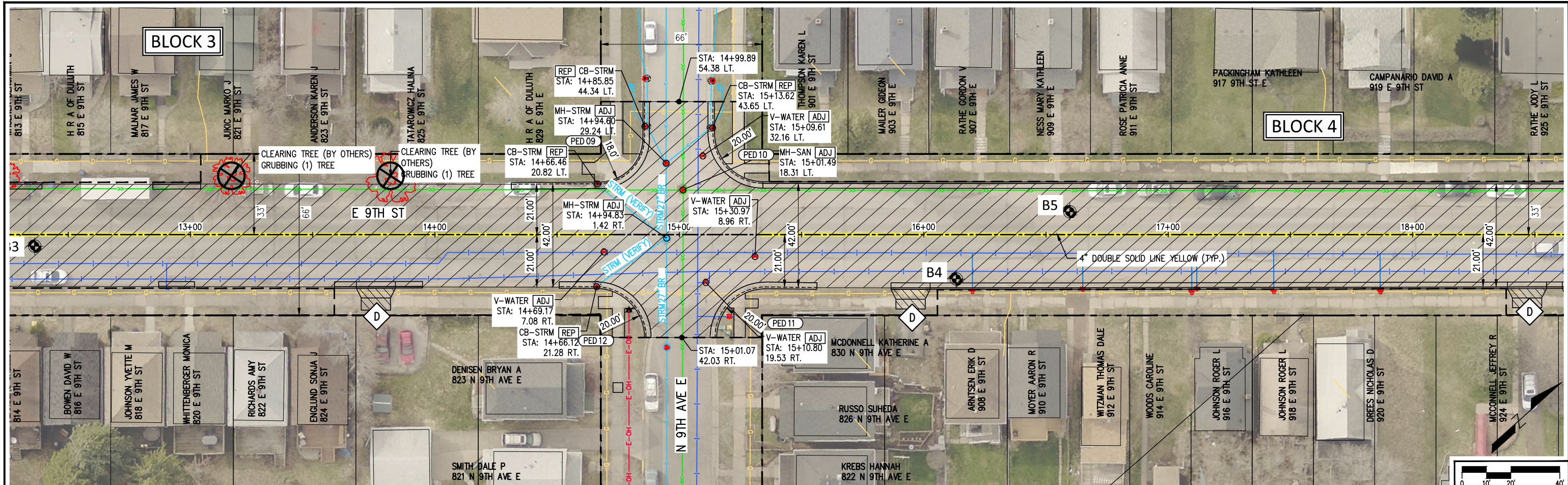
TRAFFIC SIGN LEGEND

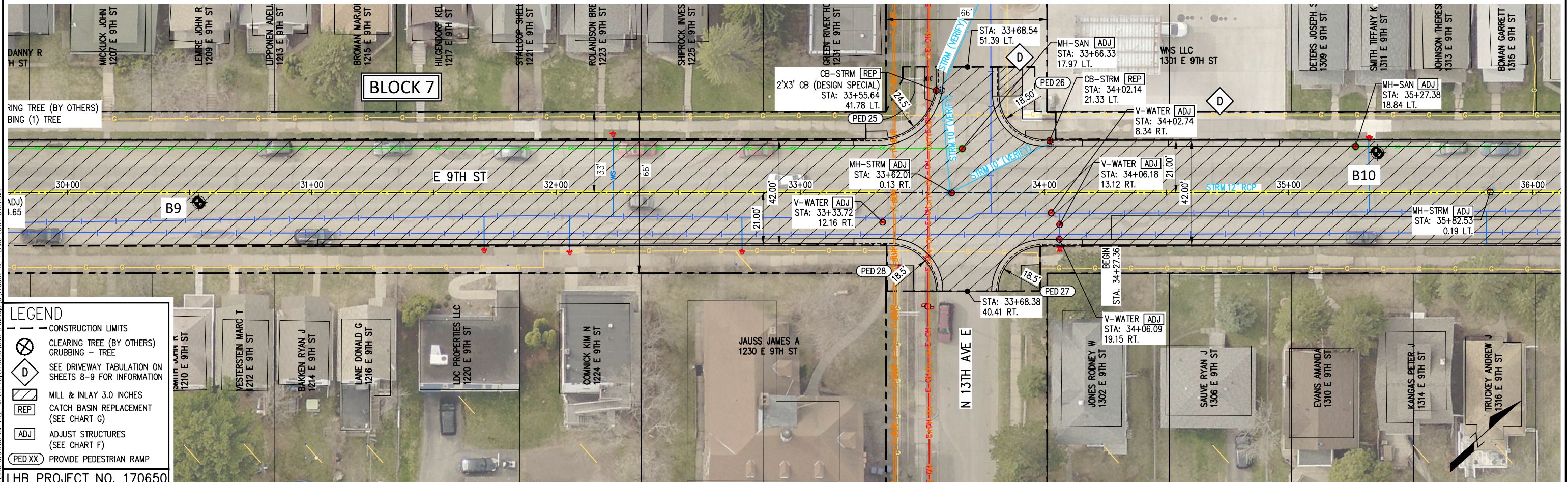
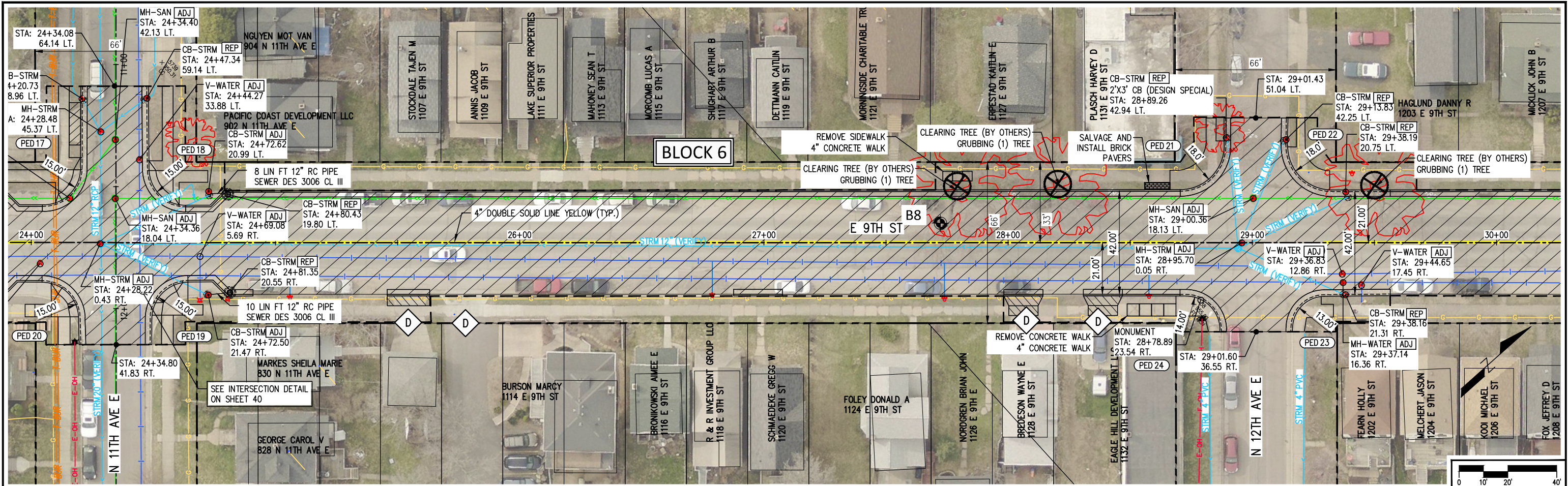
PLAN SYMBOL	DESCRIPTION
	SINGLE POST SIGNAGE
①	
	DOUBLE POST SIGNAGE
②	
③	
 E 9TH/8TH ST	
	CLOSED INTERSECTION
	WORK AREA



LEGEND

- CONSTRUCTION LIMITS
- ⊗ CLEARING TREE (BY OTHERS) GRUBBING - TREE
- D SEE DRIVEWAY TABULATION ON SHEETS 8-9 FOR INFORMATION
- ▨ MILL & INLAY 3.0 INCHES
- REP CATCH BASIN REPLACEMENT (SEE CHART G)
- ADJ ADJUST STRUCTURES (SEE CHART F)
- PED XX PROVIDE PEDESTRIAN RAMP





LEGEND

- CONSTRUCTION LIMITS
- ⊗ CLEARING TREE (BY OTHERS)
GRUBBING (1) TREE
- D SEE DRIVEWAY TABULATION ON
SHEETS 8-9 FOR INFORMATION
- ▨ MILL & INLAY 3.0 INCHES
CATCH BASIN REPLACEMENT
(SEE CHART G)
- ADJ ADJUST STRUCTURES
(SEE CHART F)
- PED XX PROVIDE PEDESTRIAN RAMP

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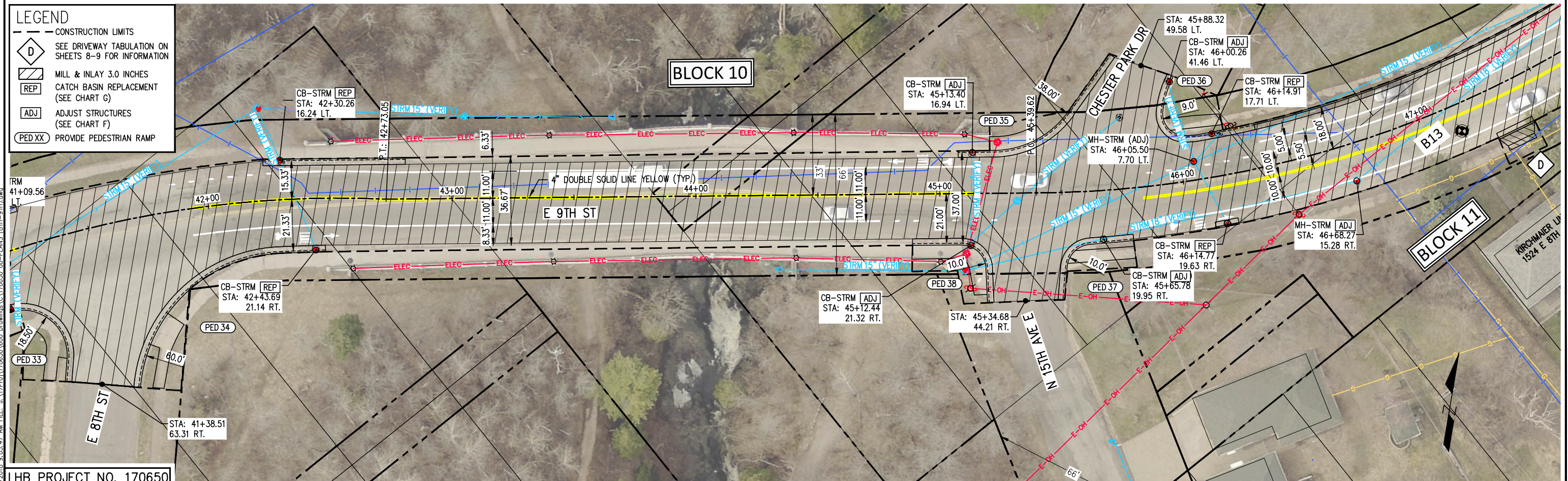
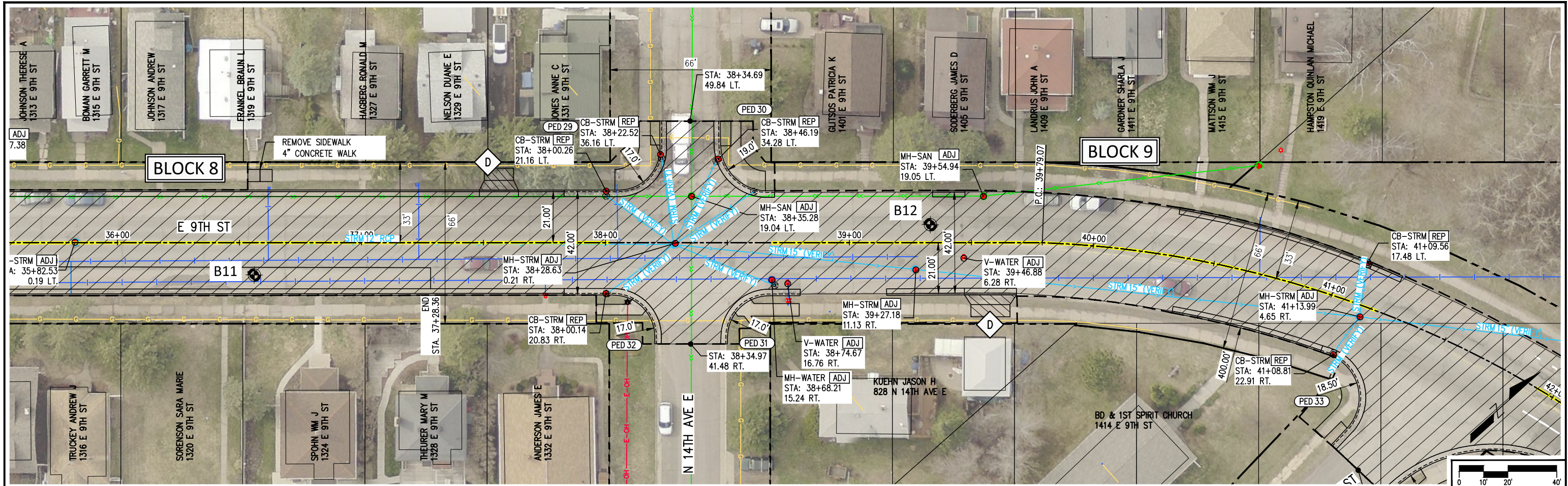
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CITY PROJECT NO. 0855TR

S.P. 118-134-017

CONSTRUCTION PLAN - 8TH/9TH
SHEET NO. 49 OF 58 SHEETS



LEGEND

- CONSTRUCTION LIMITS
- D SEE DRIVEWAY TABULATION ON SHEETS 8-9 FOR INFORMATION
- REP MILL & INLAY 3.0 INCHES CATCH BASIN REPLACEMENT (SEE CHART G)
- ADJ ADJUST STRUCTURES (SEE CHART F)
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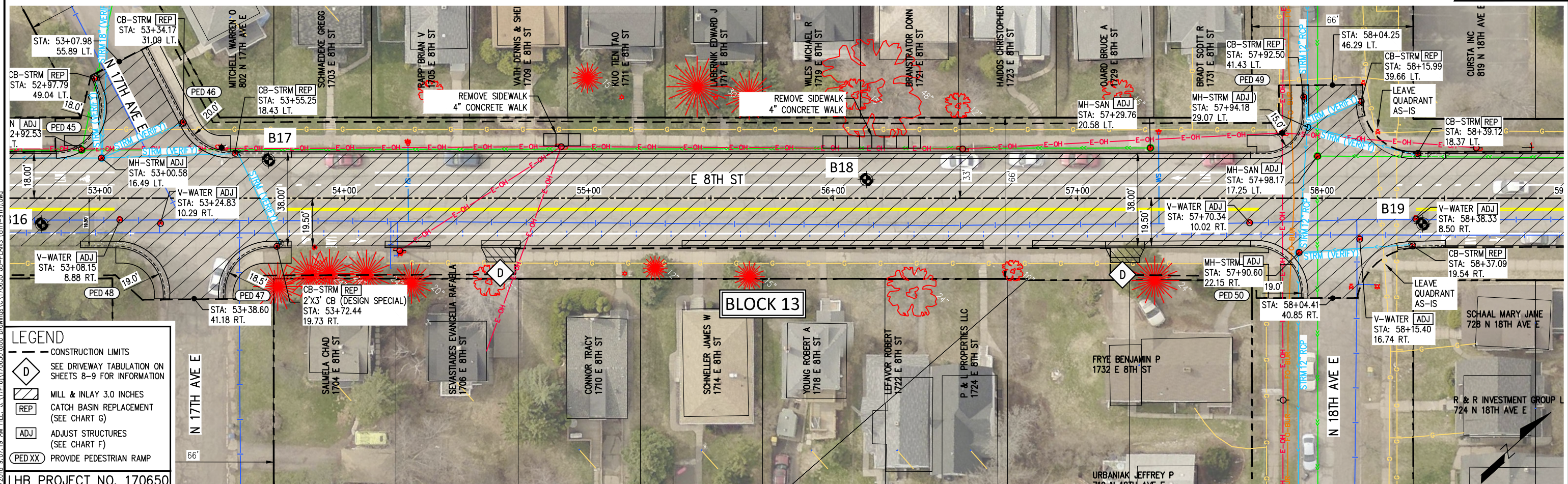
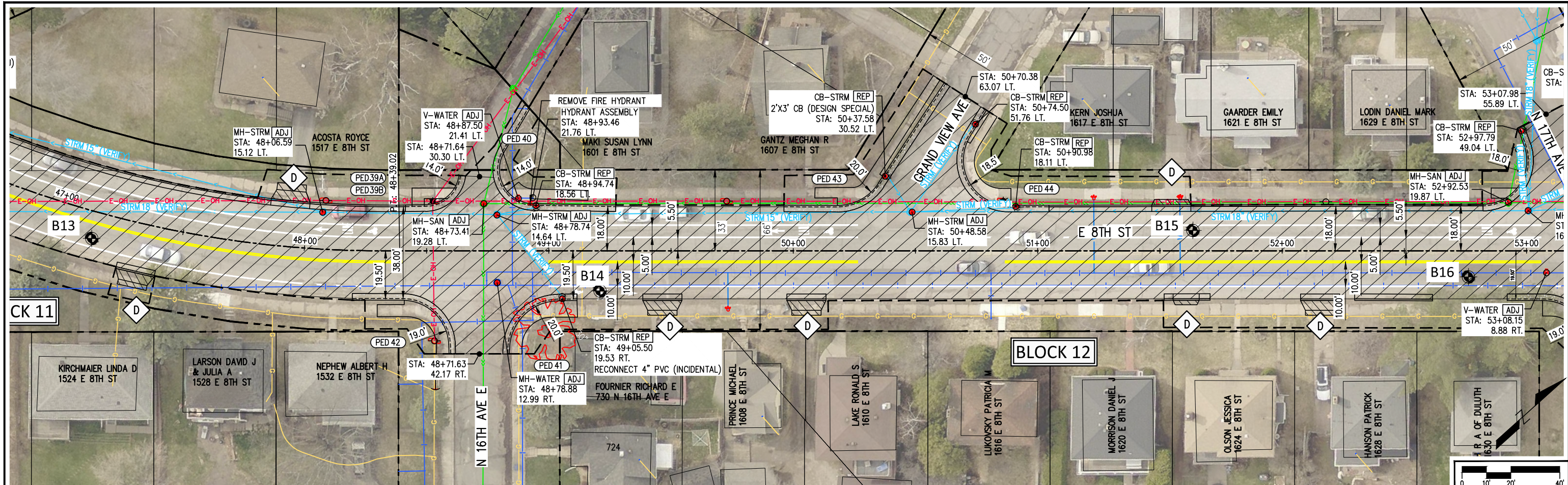
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CONSTRUCTION PLAN - 8TH/9TH
SHEET NO. 50 OF 58 SHEETS



LEGEND

- CONSTRUCTION LIMITS
- D SEE DRIVEWAY TABULATION ON SHEETS 8-9 FOR INFORMATION
- MILL & INLAY 3.0 INCHES
- RE CATCH BASIN REPLACEMENT (SEE CHART G)
- ADJ ADJUST STRUCTURES (SEE CHART F)
- PEDXX PROVIDE PEDESTRIAN RAMP

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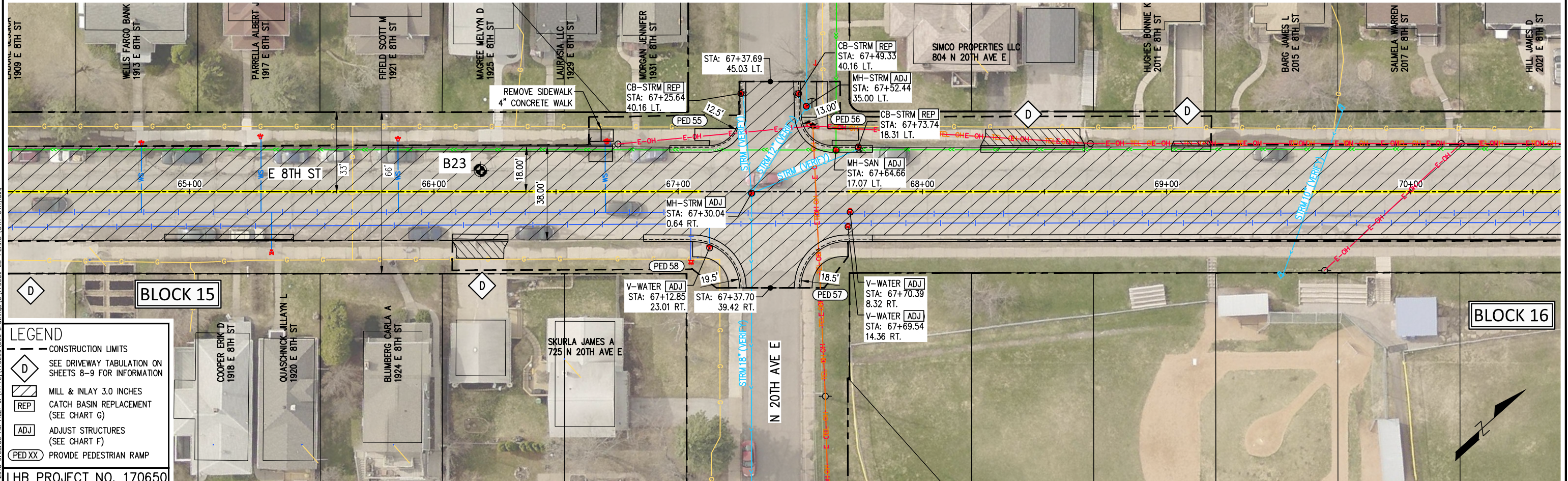
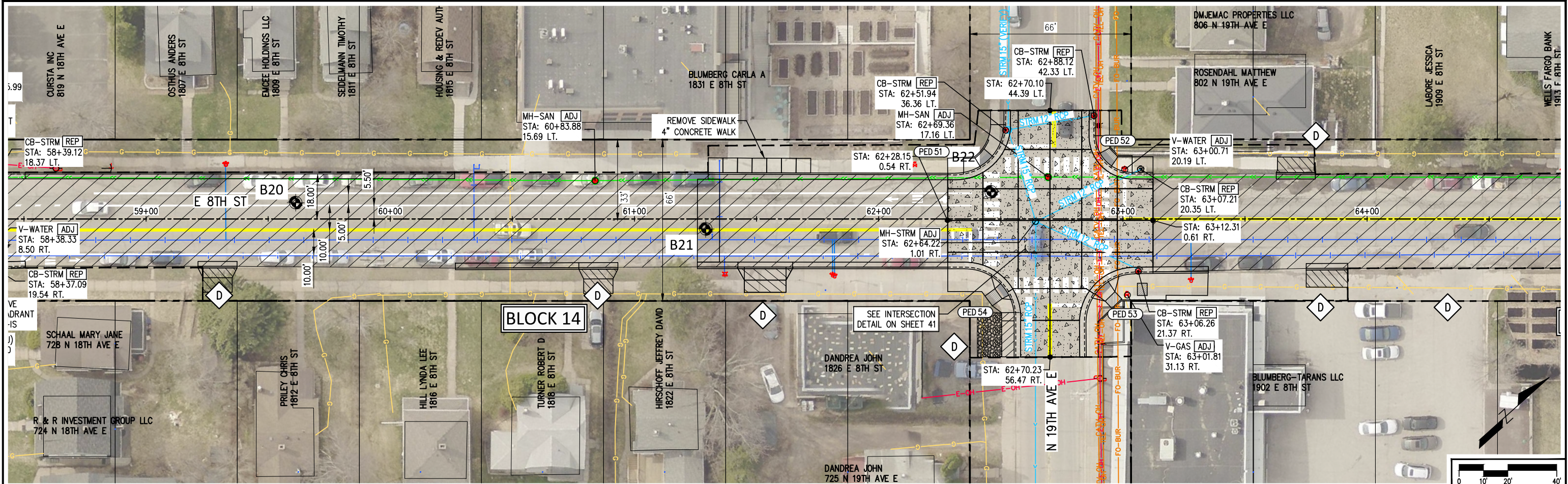
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CONSTRUCTION PLAN - 8TH/9TH
SHEET NO. 51 OF 58 SHEETS



- LEGEND**
- CONSTRUCTION LIMITS
 - D SEE DRIVEWAY TABULATION ON SHEETS 8-9 FOR INFORMATION
 - MILL & INLAY 3.0 INCHES
 - RE CATCH BASIN REPLACEMENT (SEE CHART G)
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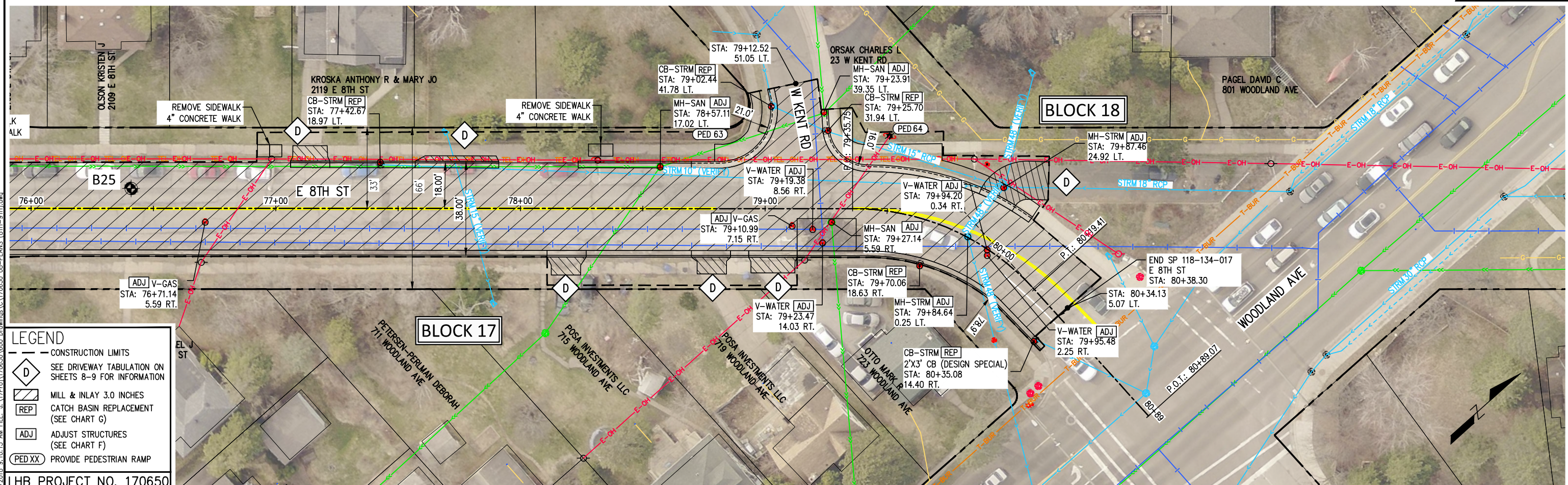
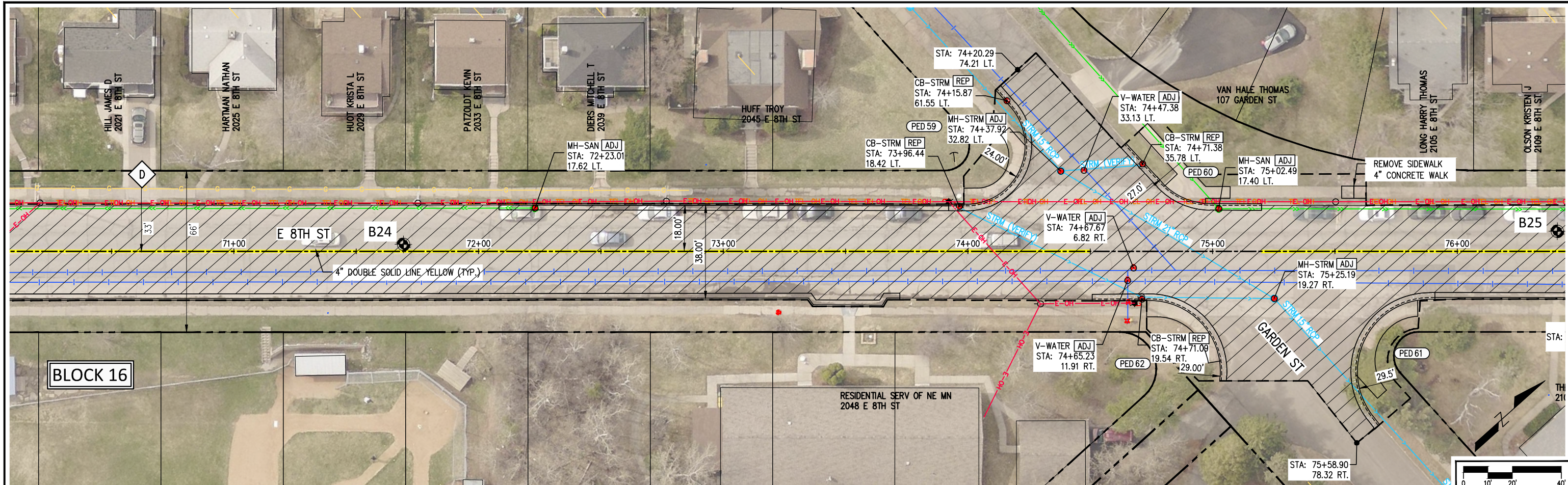
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CITY PROJECT NO. 0855TR

S.P. 118-134-017

CONSTRUCTION PLAN - 8TH/9TH
SHEET NO. 52 OF 58 SHEETS



LEGEND

- CONSTRUCTION LIMITS
- D SEE DRIVEWAY TABULATION ON SHEETS 8-9 FOR INFORMATION
- MILL & INLAY 3.0 INCHES
- REP CATCH BASIN REPLACEMENT (SEE CHART G)
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CONSTRUCTION PLAN - 8TH/9TH

SHEET NO. 53 OF 58 SHEETS

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.

EPOXY:

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 EPOXY MARKING APPLICATION SHALL IMMEDIATELY FOLLOW THE PAVEMENT CLEANING. GLASS BEADS SHALL BE APPLIED IMMEDIATELY AFTER APPLICATION OF THE EPOXY 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.

POLY PREFORM INLAY APPLICATION:

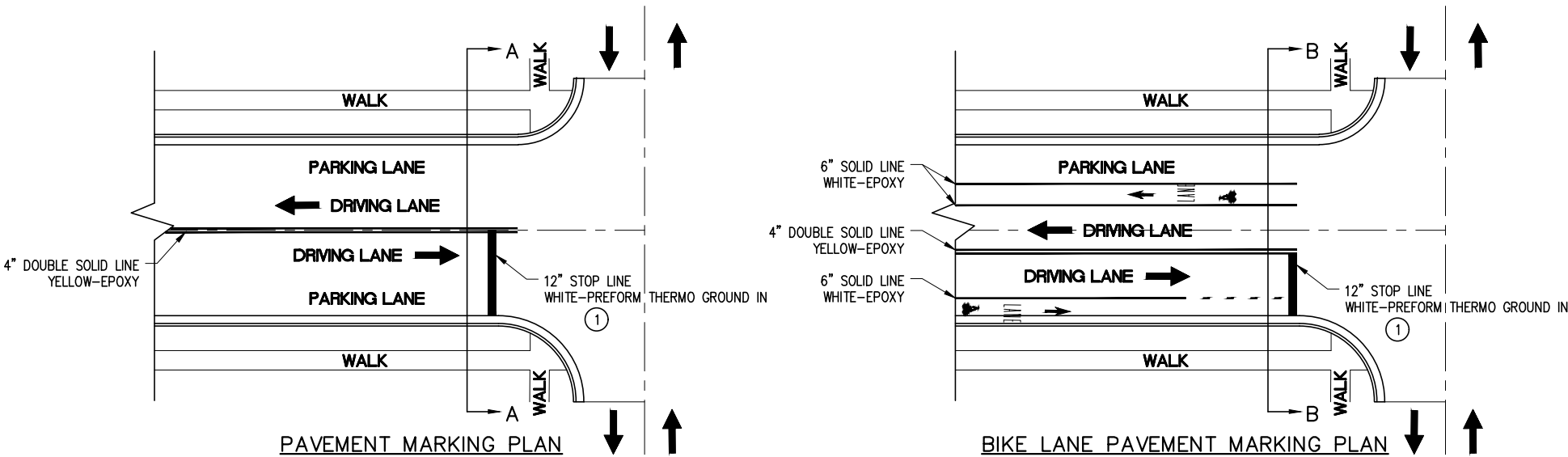
MAT TEMPERATURE SHALL BE CHECKED USING A THERMOMETER TO MAKE SURE THE INLAY IS BEING DONE IN THE PROPER TEMPERATURE RANGE. THE TEMPERATURE SHOULD MEASURE BETWEEN 150° F (ASPHALT FIRM ENOUGH TO WALK ON) AND 120° F. APPLICATION BELOW 120° F MAY NOT GET A PROPER INLAY. INLAYS ARE NOT RECOMMENDED AFTER SEPTEMBER 15th AS THE ASPHALT COOLS TOO FAST AT THIS TIME OF THE YEAR.

NO PRIMERS ARE USED FOR INLAY APPLICATION. DO NOT INSTALL LANE LINES ON AN ASPHALT SEAM. ROLLING OF ALL THE MARKINGS SHOULD BE LENGTHWISE IN THE DIRECTION THEY WERE LAID. FOR CROSSWALKS AND STOP BARS, INITIAL TAMPING WITH THE TAMPING CART IS RECOMMENDED USING ONLY 100 LBS. OF WEIGHT.

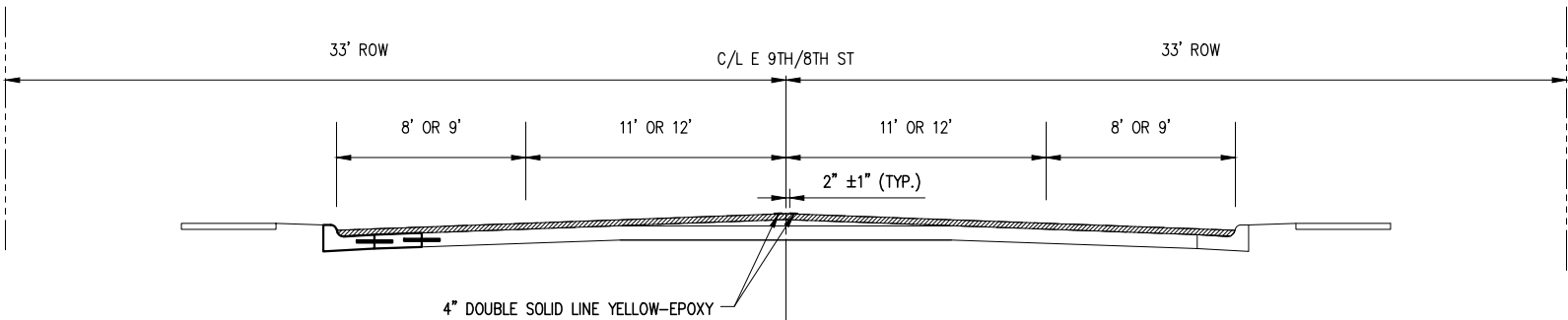
USE COMPACTION ROLLER TO EMBED (INLAY) MARKINGS INTO PAVEMENT SURFACE. USE MINIMUM SPEED AND WATER ON ROLLER. DO NOT USE VIBRATOR. IF MARKING BUCKLES OR DISTORTS SEVERELY IN FRONT OF ROLLER, MAT TEMPERATURE OR ROLLER SPEED MAY BE TOO HIGH.

POLY PREFORM GROOVED APPLICATION:

CONCRETE PAVEMENT SURFACES AND BITUMINOUS PAVEMENT SURFACES WHERE PAVEMENT MARKINGS CANNOT BE INLAIN IN THE HOT MAT, SHALL BE GROOVED FOR THE INSTALLATION OF DURABLE REFLECTORIZED PAVEMENT MARKINGS. SEE SPECIAL PROVISIONS.

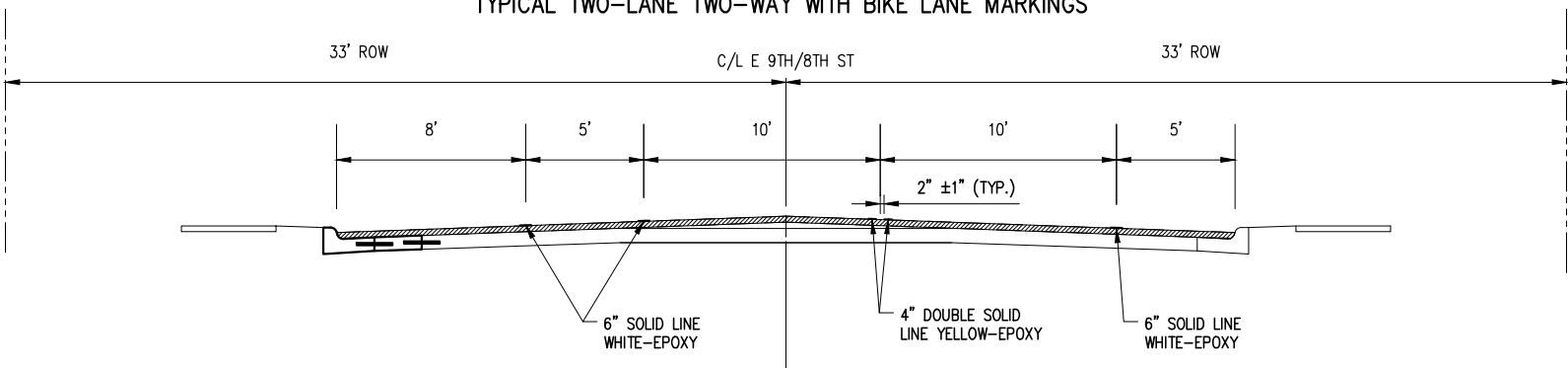


TYPICAL TWO-LANE TWO-WAY MARKINGS

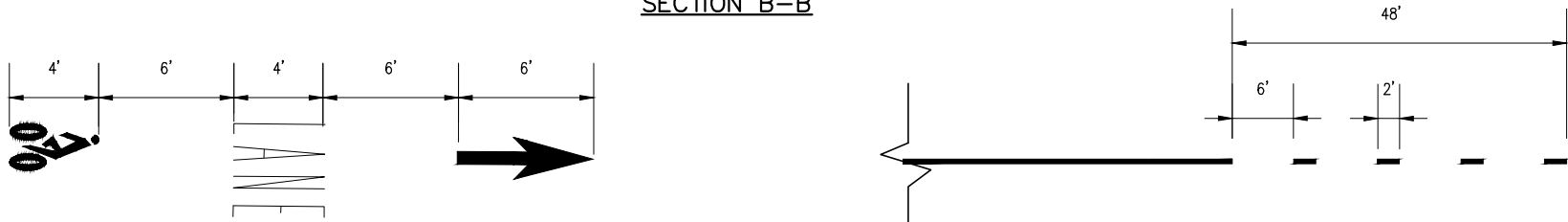


SECTION A-A

TYPICAL TWO-LANE TWO-WAY WITH BIKE LANE MARKINGS



SECTION B-B



J	PAVEMENT MARKINGS		
ITEM	UNIT	TOTALS	
INTERIM PAVEMENT MARKING	LIN FT	13	634
6" SOLID LINE EPOXY	LIN FT	4	321
4" SOLID LINE PREFORM TAPE	LIN FT	2	271
4" DOUBLE SOLID LINE EPOXY	LIN FT	6	817
12" SOLID LINE PREFORM THERMO GROUND IN	LIN FT	159	
PAVEMENT MESSAGE EPOXY	SQ FT	501	
CROSSWALK PREFORM THERMOPLASTIC GROUND IN	SQ FT	1	248

KEY NOTES

1 PROVIDE STOP LINES AT THE FOLLOWING LOCATIONS:

INTERSECTION OF E 9TH ST AND N 8TH AVE (4 EA).
INTERSECTION OF E 9TH ST AND N 10TH AVE E (4 EA)
INTERSECTION OF E 8TH ST AND N 19TH AVE E (4 EA).

STOP LINES SHALL BE PLACED NOT MORE THAN 30 FEET NOR LESS THAN 4 FEET FROM THE NEAREST EDGE OF THE INTERSECTING CURB LINE.

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BRAD SCOTT
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S.P. 118-134-017

PAVEMENT MARKING PLAN

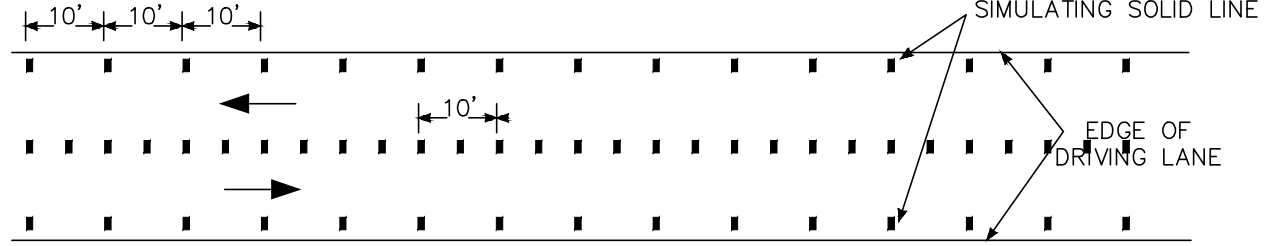
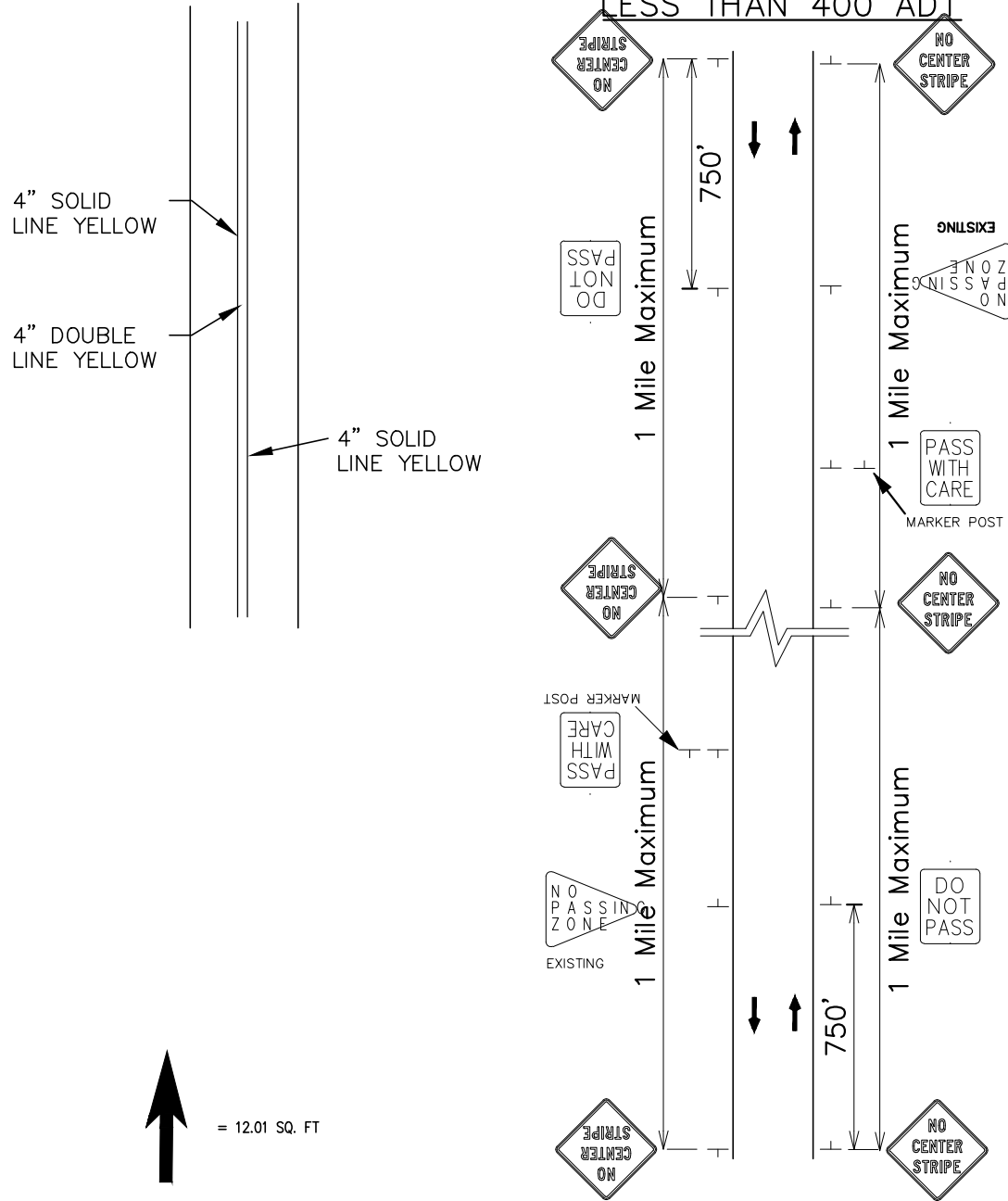
SHEET NO. 54 OF 58 SHEETS

INTERIM STRIPING DETAIL

TWO LANE, TWO WAY

TWO LANE, TWO WAY - WITHOUT MARKINGS

SIMULATING A SOLID LINE AND A BROKEN LINE (50 FOOT CYCLE) WITH



USING TRPM'S AS INTERIM PAVEMENT MARKING

WHEN TRPM'S ARE USED TO SIMULATE A LINE THE FOLLOWING GUIDELINE APPLIES:

SKIP STRIPE – USES 3 TRPM's PER 10' SKIP STRIPE ON
5' CENTERS WITH A 40' GAP

SOLID LINE - USES TRPM'S ON 10' CENTERS ON TANGENTS, FLATTER GRADES AND CURVES UNDER 6 DEGREES. FOR CURVES OVER 6 DEGREES AND STEEP GRADES, THIS SPACING SHALL BE REDUCED TO 5' CENTERS.

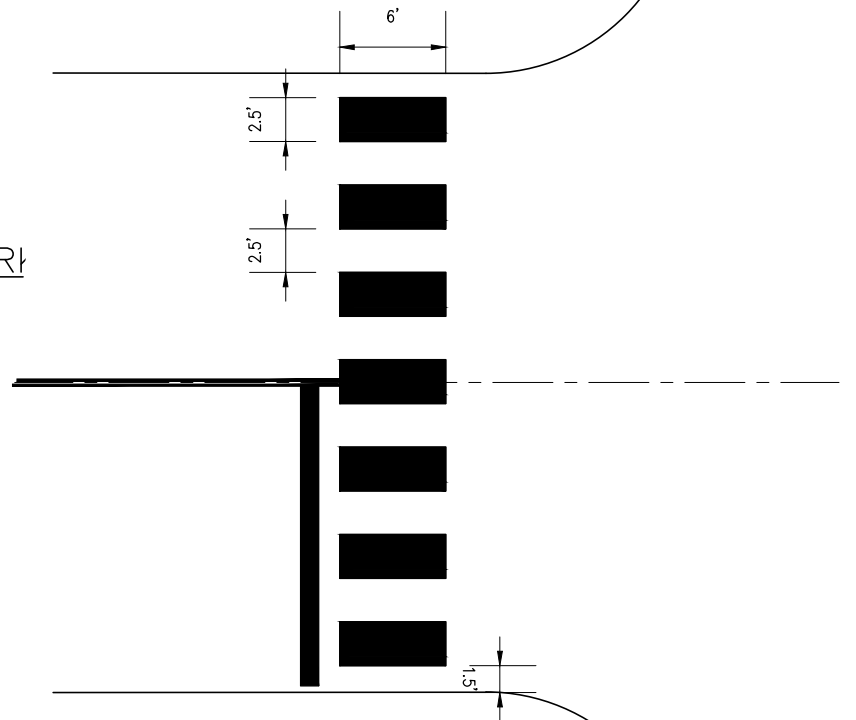
GENERAL NOTES:

SEE SPECIAL PROVISIONS FOR INTERIM PAVEMENT MARKING GUIDELINES

USING SIGNING AS INTERIM PAVEMENT MARK

ON LOW VOLUME ROADS WITH AN ADT (AVERAGE DAILY TRAFFIC) OF LESS THAN 400 VEHICLES, THE SIGNS MAY BE USED IN LIEU OF PAVEMENT MARKINGS FOR UP TO 14 CALENDAR DAYS (SEE SECTION 5A.1 OF THE MMUTCD) OR AS DIRECTED BY THE PROJECT ENGINEER.

1. IF NO INTERIM MARKINGS ARE USED A "NO CENTER STRIPE" SIGN (W8-12) SHALL BE USED FOR EACH DIRECTION OF TRAVEL. THIS SIGN SHALL BE REPEATED AT MAJOR INTERSECTIONS OR ONE MILE INTERVALS, WHICHEVER IS GREATER.
2. IF NOT ALREADY IN PLACE, A "DO NOT PASS" SIGN (R4-1) SHALL BE PLACED ON THE RIGHT SIDE OF THE ROAD AT THE BEGINNING OF THE ZONE OPPOSITE OF THE "NO PASSING ZONE" SIGN (W14-3)



CROSSWALK DETAIL

NOTES:

1. PAINTED AREAS TO BE CENTERED ON CENTERLINE AND LANES.
2. A MINIMUM OF 1.5 FEET CLEAR DISTANCE SHALL BE LEFT ADJACENT TO THE CURB FACE. IF LAST PAINTED AREA FALLS INTO THIS DISTANCE IT MUST BE OMITTED.

PAVEMENT MARKINGS AREAS

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PAVEMENT MARKING PLAN

SHEET NO. 55 OF 58 SHEETS

PLOT DATE: 5/14/2018 8:21:54 AM FILE: J:\PProj\170650\600 Drawings\170650 10-Signing_Plan.dwg

SALVAGE & INSTALL SIGN TYPE C										S-1
STATION	OFFSET	SIGN NO	QTY	POSTS			MTG HT (1) FEET	PANEL		PANEL LEGEND
				NO & TYPE	KNEE BRACES QTY	LENGTH FEET		SIZE INCH		
			EACH							
9+94.32	22.62 RT	R1-1	1	1-U		16	7.5	30	x 30	STOP
9+94.32	22.62 RT	R1-3P	1	1-U			7	18	x 6	ALL WAY
10+01.99	24.97 LT	S1-1	1	1-U		14	8.5	30 PENT		SCHOOL CROSSING (SYMBOL)
10+01.99	24.97 LT	W16-7mPL	1	1-U			7	24	x 18	45 DEGREE DOWNWARD SUPPLEMENTAL ARROW (PLAQUE)
10+13.23	31.86 RT	S1-1	1	1-U		14	8.5	30 PENT		SCHOOL CROSSING (SYMBOL)
10+13.23	31.86 RT	W16-7mPL	1	1-U			7	24	x 18	45 DEGREE DOWNWARD SUPPLEMENTAL ARROW (PLAQUE)
10+55.99	30.89 RT	R1-1	1	1-U		16	7.5	30	x 30	STOP
10+55.99	30.89 RT	R1-3P	1	1-U			7	18	x 6	ALL WAY
10+66.30	22.94 LT	R1-1	1	1-U		16	7.5	30	x 30	STOP
10+66.30	22.94 LT	R1-3P	1	1-U			7	18	x 6	ALL WAY
19+39.18	24.01 LT	R1-1	1	1-U		16	7.5	30	x 30	STOP
19+39.18	24.01 LT	R1-3P	1	1-U			7	18	x 6	ALL WAY
19+49.14	35.39 LT	R1-1	1	1-U		16	7.5	30	x 30	STOP
19+49.14	35.39 LT	R1-3P	1	1-U			7	18	x 6	ALL WAY
19+98.88	23.96 LT	R1-1	1	1-U		16	7.5	30	x 30	STOP
19+98.88	23.96 LT	R1-3P	1	1-U			7	18	x 6	ALL WAY
23+83.77	24.91 RT	R8-3	1	1-U		14	7	12	x 18	NO PARKING (SYMBOL) HERE TO CORNER
23+93.79	25.57 RT	D11-1	1	1-U		14	7	24	x 18	BIKE ROUTE (WITH SYMBOL) ROUTE INFORMATION
24+15.31	34.3 LT	R1-1	1	1-U		15	7	30	x 30	STOP
29+22.30	31.76 RT	R1-1	1	1-U		15	7	30	x 30	STOP
45+96.73	25.9 LT	D3-1	1			13	7	2.5	x 1	Chester Park Dr
50+34.73	29.34 LT	R1-1	1	1-U		15	7	30	x 30	STOP
62+35.74	23.99 RT	R1-1	1	1-U		16	7.5	30	x 30	STOP
62+35.74	23.99 RT	R1-3P	1	1-U			7	18	x 6	ALL WAY
62+45.26	34.13 RT	D3-1	1	1-U		14	7	24	x 18	N 19th Av E & E 8th St
62+90.36	40.45 RT	R1-1	1	1-U		16	7.5	30	x 30	STOP
62+90.36	40.45 RT	R1-3P	1	1-U			7	18	x 6	ALL WAY
63+03.35	20.58 LT	R1-1	1	1-U		16	7.5	30	x 30	STOP
63+03.35	20.58 LT	R1-3P	1	1-U			7	18	x 6	ALL WAY
TOTAL			29							
GENERAL NOTES: 1. POST LENGTHS ARE APPROXIMATE AND INCLUDE EMBEDMENT, BUT DO NOT INCLUDE ADDITIONAL LENGTH REQUIRED FOR SPLICE. 2. SEE SHEETS 57 & 58 FOR STRUCTURAL DETAILS. 3. SEE MNDOT STANDARD SIGNS AND MARKINGS MANUAL FOR PUNCHING CODE AND DETAILED DRAWINGS OF TYPE C SIGN PANELS.										

SIGN PANELS TYPE C										S-2
SIGN NO	QTY	POSTS			MTG HT (1)	PANEL			CODE NO	PANEL LEGEND
		NO & TYPE	KNEE BRACES QTY	LENGTH		SIZE	AREA	TOTAL AREA		
C-0	2	1-U		15	7	24 x 18	3.00	6.00	R3-17	BIKE LANE
C-0	2	1-U		15	7	24 x 8	1.33	2.67	R3-17bP	ENDS (Plaque) (2)
TOTAL								8.67		

SPECIFIC NOTES:
(1) MOUNTING HEIGHT IS MINIMUM (WITH A +6 INCH TOLERANCE) SEE SHEET NO. 58 FOR TYPICAL MOUNTING.
(2) MOUNT BELOW R3-17 ON SAME POST.

GENERAL NOTES:
1. POST LENGTHS ARE APPROXIMATE AND INCLUDE EMBEDMENT, BUT DO NOT INCLUDE ADDITIONAL LENGTH REQUIRED FOR SPLICE.
2. SEE SHEETS 57 AND 58 FOR STRUCTURAL DETAILS.
3. SEE MNDOT STANDARD SIGNS AND MARKINGS MANUAL FOR PUNCHING CODE AND DETAILED DRAWINGS OF TYPE C SIGN PANELS.

LHB PROJECT NO. 170650

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BRAD SCOTT
PRINTED NAME


SIGNATURE

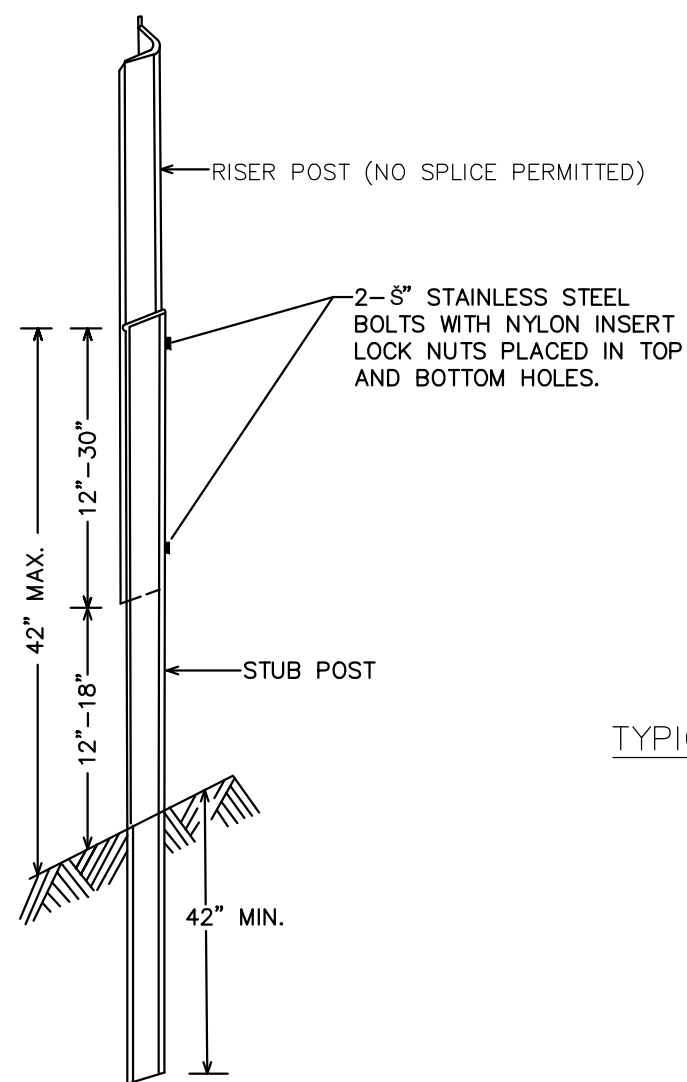
05/11/2018
DATE
46198
LIC. NO.

E 9TH/8TH ST RECONDITIONING
CITY PROJECT NO. 0855TR

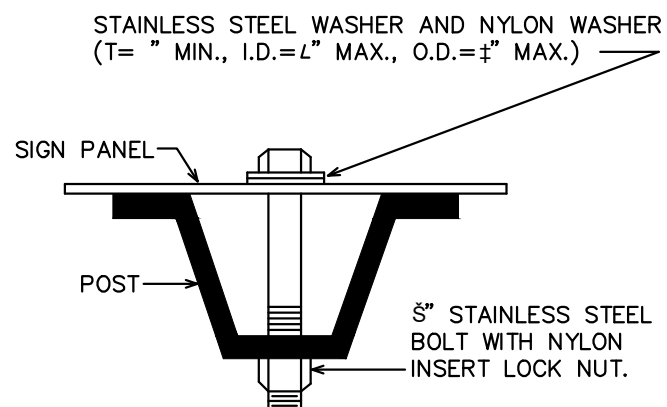
S.P. 118-134-017

SIGNING PLAN
SHEET NO. 56 OF 58 SHEETS

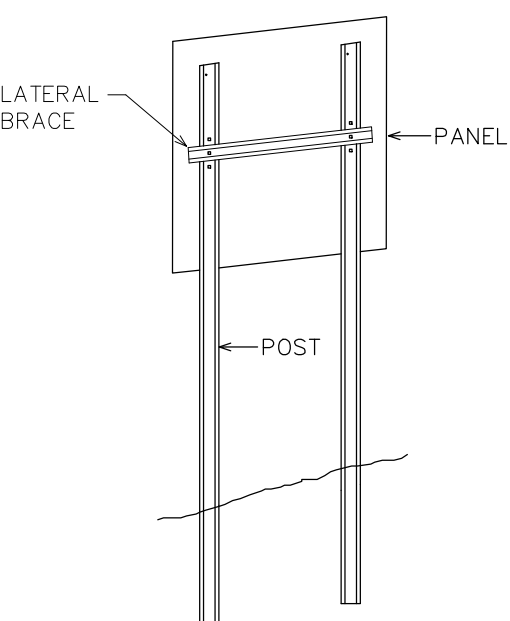
TYPE C & D POST



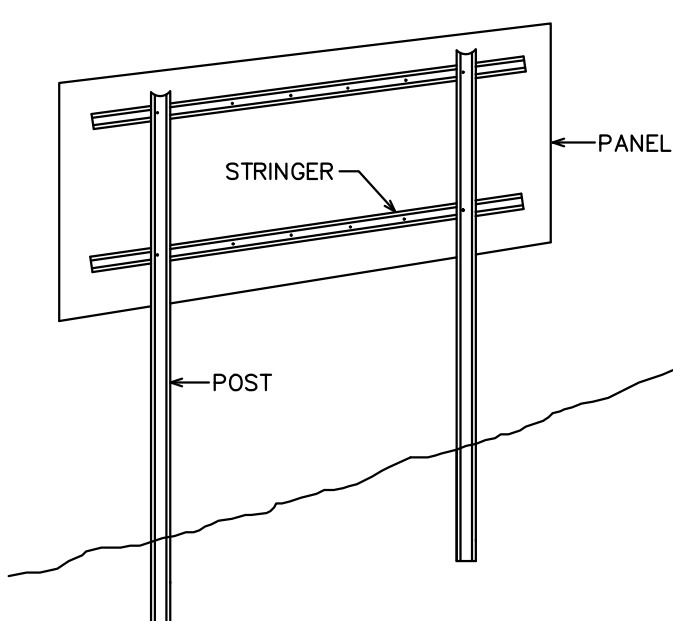
U POST BREAKAWAY SPLICE



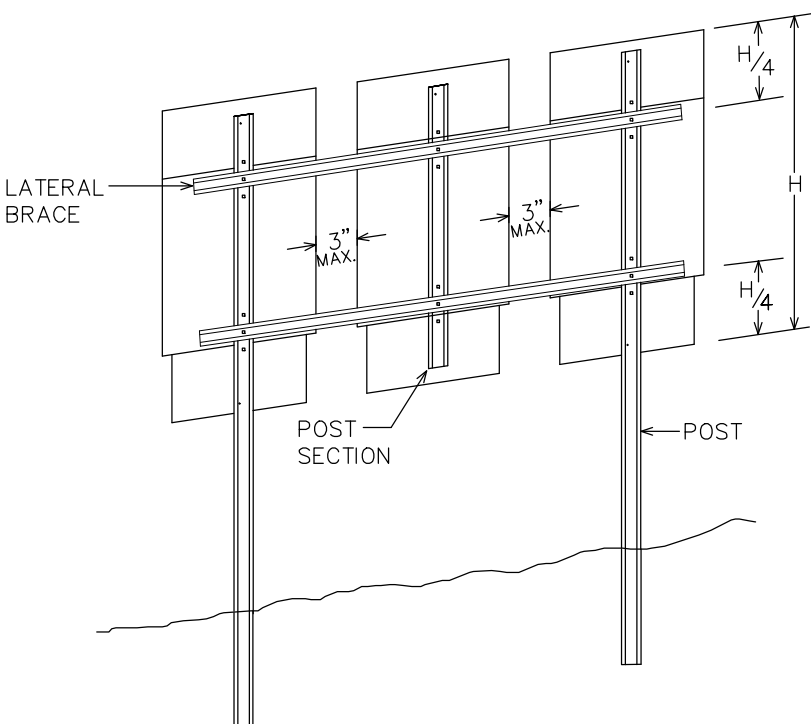
U POST MOUNTING
TYPE C SIGNS



TYPICAL TYPE C INSTALLATION



TYPICAL TYPE D INSTALLATION



MODIFIED TYPE C INSTALLATION

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

TYPE C & D SIGN
STRUCTURAL DETAILS

REVISED: 5-5-2017

LHB PROJECT NO. 170650

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BRAD SCOTT
PRINTED NAME

BRAD SCOTT
SIGNATURE

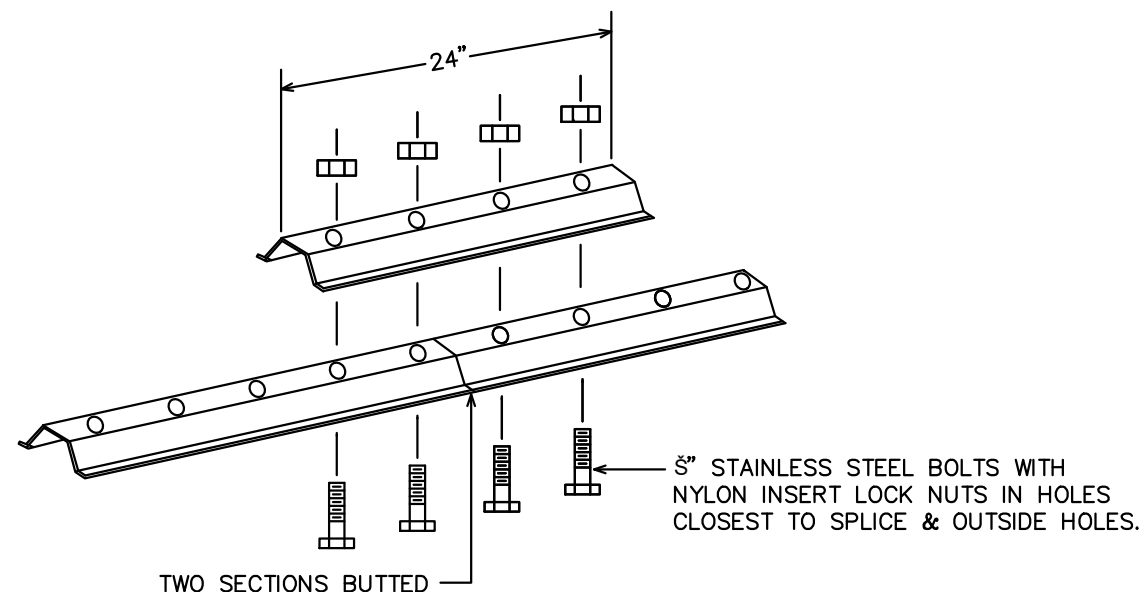
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CITY PROJECT NO. 0855TR

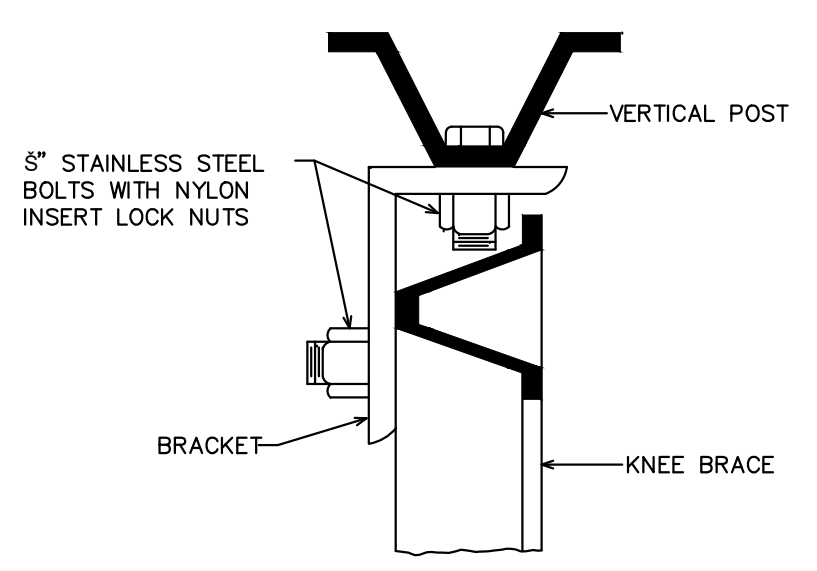
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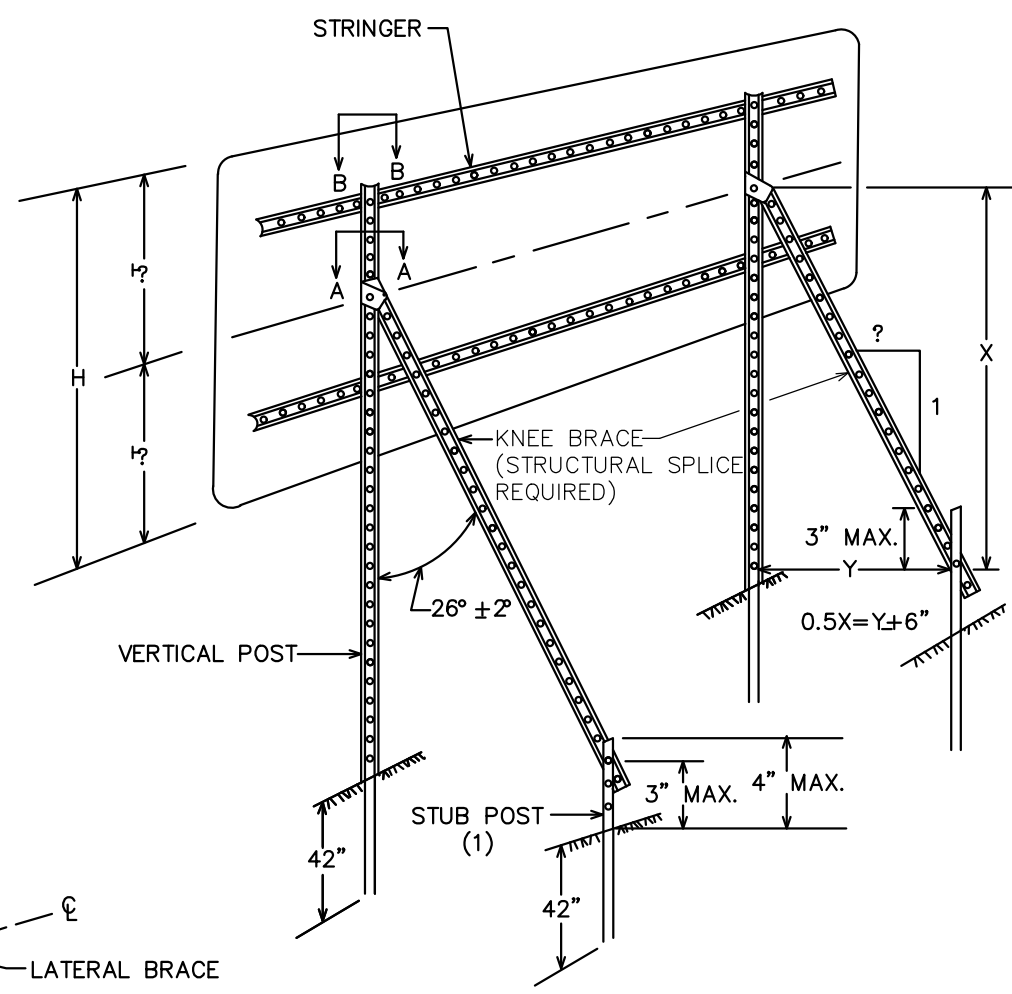
SHEET NO. 57 OF 58 SHEETS



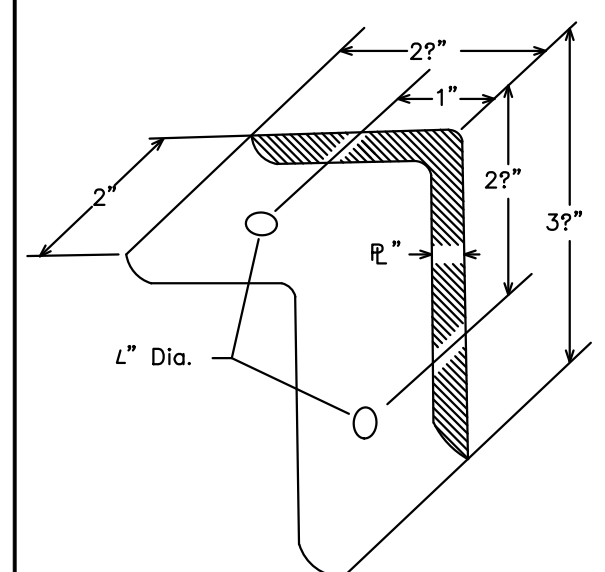
LATERAL BRACE OR STRINGER
SPLICE DETAIL (EXPLODED VIEW)



SECTION A-A

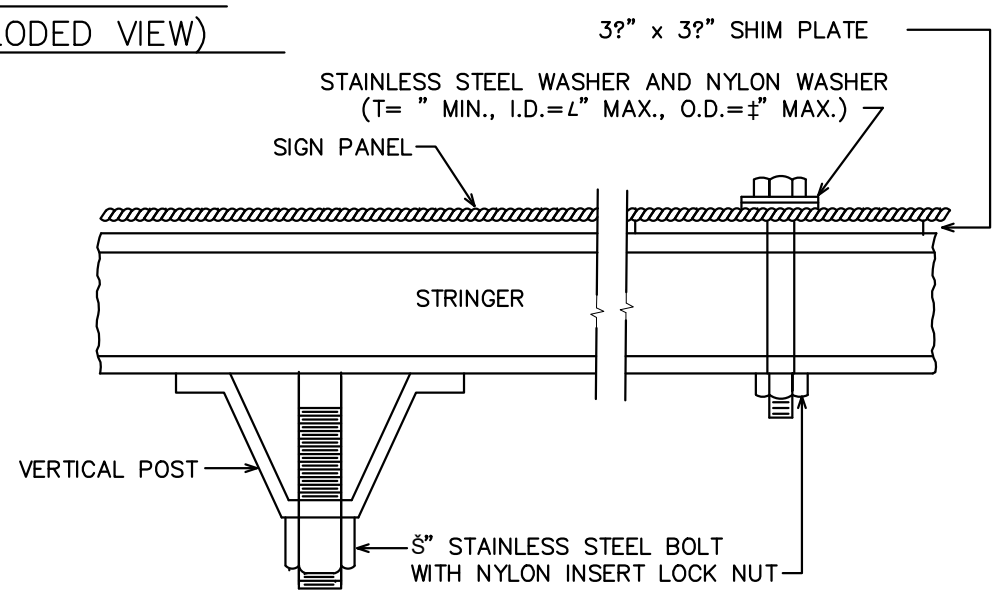


TYPICAL "A-FRAME" INSTALLATION
TYPE "D" SIGNS

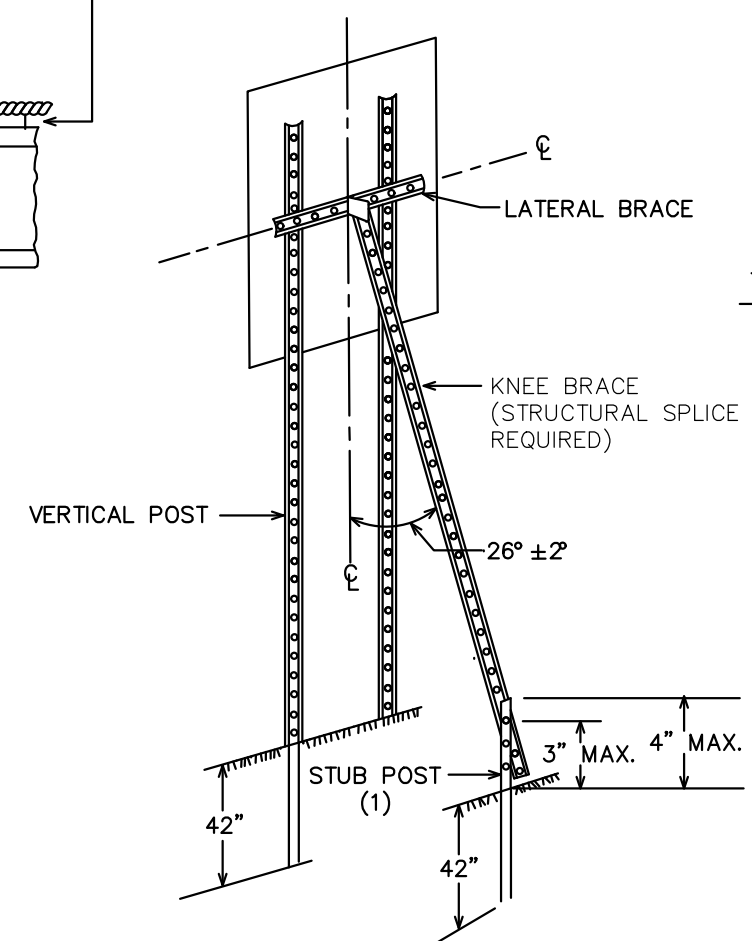


A-FRAME BRACKET

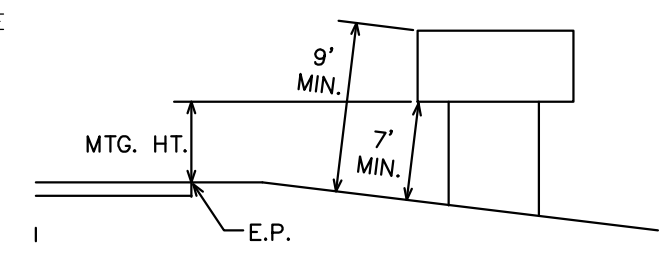
(STEEL MNDOT 3306 GALVANIZED PER MNDOT 3394)



SECTION B-B



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



TYPICAL MOUNTING

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

TYPE C & D SIGN
STRUCTURAL DETAILS

REVISED: 5-5-2017_

STRUCTURAL SPLICE

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

LHB PROJECT NO. 170650

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BRAD SCOTT
PRINTED NAME

Brad Scott
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SHEET NO. 58 OF 58 SHEETS