

CITY OF COLUMBUS

CONSTRUCTION PLANS FOR

ZURICH STREET EXTENSION

CONCRETE CURB AND GUTTER, BITUMINOUS PAVING, AGGREGATE BASE, SIGNING & STRIPING,
GRADING, TURF RESTORATION AND EROSION CONTROL, AND SIGNAL SYSTEM

MAY, 2020

RESOURCE LIST

CITY OF COLUMBUS

City Hall
16319 Kettle River Blvd NE
Forest Lake, Minnesota
55025 (651) 464-3120

City Administrator:
Elizabeth Mursko

Mayor: Jesse Preiner

City Council Members:
Jeff Duraine
Shelly Logren?
Denny Peterson
Janet Hegland

City Engineer:
Kevin F. Bittner P.E.
Bolton & Menk, Inc.
7533 Sunwood Drive NW
Suite 206
Ramsey, Minnesota
55303 (763) 433-2851

Public Works Superintendent:
Jim Windingstad

UTILITIES

GAS

CenterPoint Energy
505 Nicollet Mall
P.O. Box 59038
Minneapolis, Minnesota
55459-0038
(800) 247-2377

XcelEnergy
1700 E. County Rd. E.
White Bear Lake, Minnesota
55110
P (651) 779-3105
C (612) 209-3501

Internet/Telephone

CenturyLink
325 Cedar St. UNIT 324
St. Paul, MN
55101
(855)-861-2800

Cable

Frontiernet
855-668-5959

MidCo

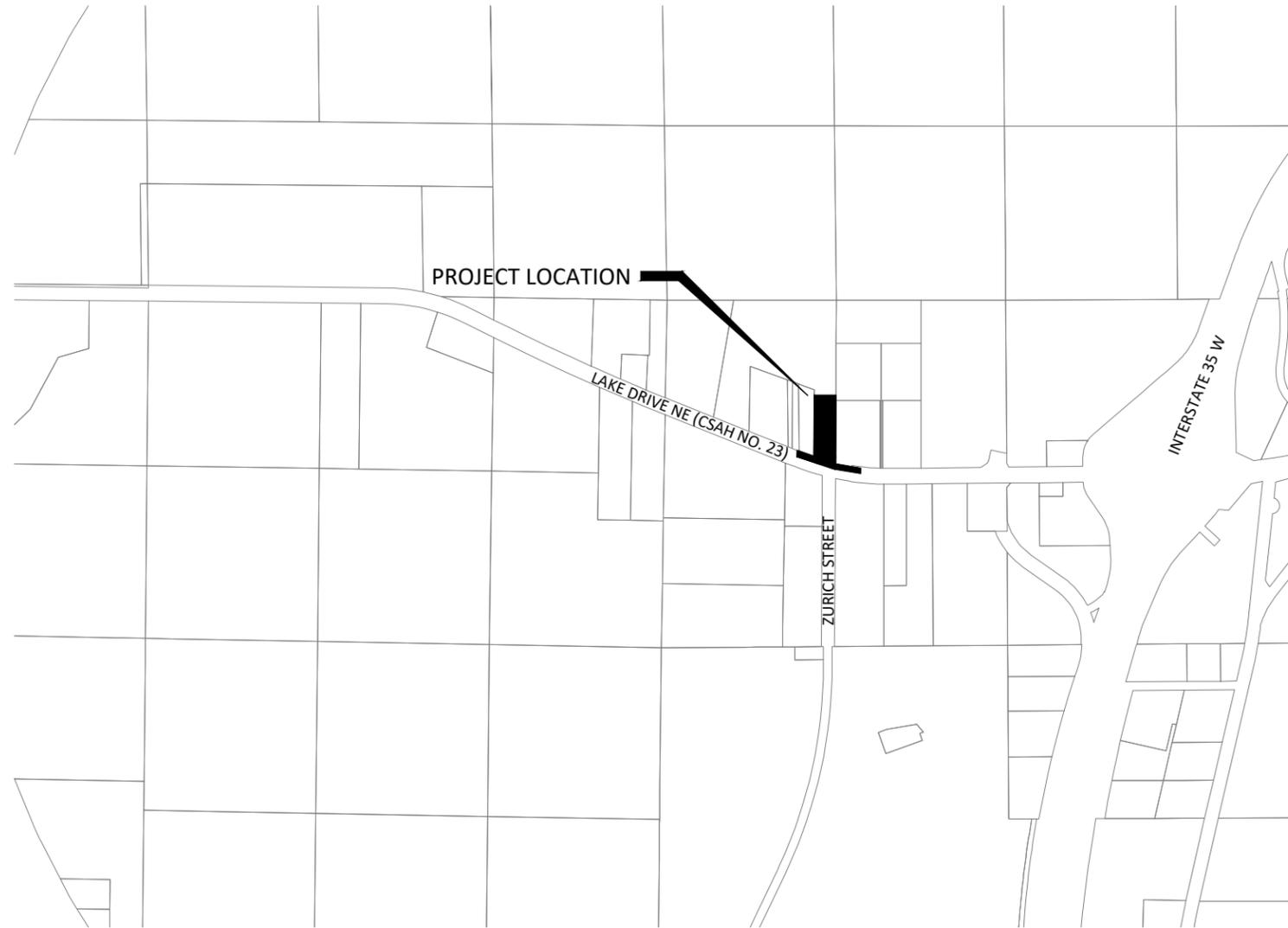
McKinley Street N.
Cambridge, Minnesota
55008
(800) 888-1300

ELECTRIC

Connexus Energy
14601 Ramsey Boulevard
Ramsey, Minnesota
55303
(763) 323-2600

XcelEnergy

1700 E. County Rd. E.
White Bear Lake,
Minnesota 55110
P (651) 779-3105
C (612) 209-3501



MAP OF THE
CITY OF COLUMBUS
ANOKA COUNTY, MN

SHEET NUMBER	SHEET TITLE
GENERAL	
1-2	TITLE SHEET, LEGEND
CIVIL	
3	EXISTING CONDITIONS, REMOVALS
4-6	TYPICAL SECTIONS, DETAILS
7	INTERSECTION DETAIL
8-13	PEDESTRIAN CURB RAMP DETAILS
14-16	SWPPP
16	TURF RESTORATION & EROSION CONTROL
18-19	PLAN & PROFILE
20	TRAFFIC CONTROL
21	SIGNING & STRIPING
22-26	CROSS SECTIONS
TRANSPORTATION	
27-37	SIGNAL PLAN

THIS PLAN SET CONTAINS 37 SHEETS.

NOTE: EXISTING UTILITY INFORMATION SHOWN ON THIS PLAN HAS BEEN PROVIDED BY THE UTILITY OWNER. THE CONTRACTOR SHALL FIELD VERIFY EXACT LOCATIONS PRIOR TO COMMENCING CONSTRUCTION AS REQUIRED BY STATE LAW. NOTIFY GOPHER STATE ONE CALL, 1-800-252-1166 OR 651-454-0002.

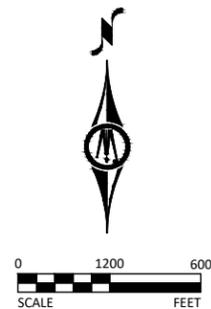
THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D UNLESS OTHERWISE NOTED. THIS UTILITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

Approved:

City of Columbus Engineer
Design Engineer: 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.

Date May 21, 2020 License Number 21814

REVIEWED & APPROVED _____ DATE: _____
Public Works Director:



+ BM=903.13 CAST IRON MONUMENT N 178613.17 E 559436.70	PROJECT DATUM: ANOKA COUNTY CORDS	RECORD DRAWING INFORMATION
	HORIZONTAL: VERTICAL: NAD83	OBSERVER: CONTRACTOR: DATE:

COLUMBUS, MINNESOTA		SHEET 1 OF 37
2020 ZURICH STREET EXTENSION		
TITLE SHEET		



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www.bolton-menk.com

DESIGNED	DRAWN	CHECKED	CLIENT PROJ. NO.
KFB	KGA	KFB	R16.120766

EXISTING TOPOGRAPHIC SYMBOLS

	ACCESS GRATE		REGULATION STATION GAS
	AIR CONDITION UNIT		SATELLITE DISH
	ANTENNA		SIGN TRAFFIC
	AUTO SPRINKLER CONNECTION		SIGNAL CONTROL CABINET
	BARRICADE PERMANENT		SOIL BORING
	BASKETBALL POST		SIREN
	BENCH		TELEPHONE BOOTH
	BIRD FEEDER		TILE INLET
	BOLLARD		TILE OUTLET
	BUSH		TILE RISER
	CATCH BASIN RECTANGULAR CASTING		TRANSFORMER-ELECTRIC
	CATCH BASIN CIRCULAR CASTING		TREE-CONIFEROUS
	CURB STOP		TREE-DEAD
	CLEAN OUT		TREE-DECIDUOUS
	CULVERT END		TREE STUMP
	DRINKING FOUNTAIN		TRAFFIC ARM BARRIER
	DOWN SPOUT		TRAFFIC SIGNAL
	FILL PIPE		TRASH CAN
	FIRE HYDRANT		UTILITY MARKER
	FLAG POLE		VALVE
	FLARED END / APRON		VALVE POST INDICATOR
	FUEL PUMP		VALVE VAULT
	GRILL		VENT PIPE
	GUY WIRE ANCHOR		WATER SPIGOT
	HANDHOLE		WELL
	HANDICAP SPACE		WETLAND DELINEATED MARKER
	IRRIGATION SPRINKLER HEAD		WETLAND
	IRRIGATION VALVE BOX		WET WELL
	LIFT STATION CONTROL PANEL		YARD HYDRANT
	LIFT STATION		
	LIGHT ON POLE		
	LIGHT-GROUND		
	MAILBOX		
	MANHOLE-COMMUNICATION		
	MANHOLE-ELECTRIC		
	MANHOLE-GAS		
	MANHOLE-HEAT		
	MANHOLE-SANITARY SEWER		
	MANHOLE-STORM SEWER		
	MANHOLE-UTILITY		
	MANHOLE-WATER		
	METER		
	ORDER MICROPHONE		
	PARKING METER		
	PAVEMENT MARKING		
	PEDESTAL-COMMUNICATION		
	PEDESTAL-ELECTRIC		
	PEDESTRIAN PUSH BUTTON		
	PICNIC TABLE		
	POLE-UTILITY		
	POST		
	RAILROAD SIGNAL POLE		

PROPOSED TOPOGRAPHIC SYMBOLS

	CLEANOUT
	MANHOLE
	LIFT STATION
	STORM SEWER CIRCULAR CASTING
	STORM SEWER RECTANGULAR CASTING
	STORM SEWER FLARED END / APRON
	STORM SEWER OUTLET STRUCTURE
	STORM SEWER OVERFLOW STRUCTURE
	CURB BOX
	FIRE HYDRANT
	WATER VALVE
	WATER REDUCER
	WATER BEND
	WATER TEE
	WATER CROSS
	WATER SLEEVE
	WATER CAP / PLUG
	RIP RAP
	DRAINAGE FLOW
	TRAFFIC SIGNS

SURVEY SYMBOLS

	BENCH MARK LOCATION
	CONTROL POINT
	MONUMENT IRON FOUND
	CAST IRON MONUMENT

EXISTING TOPOGRAPHIC LINES

	RETAINING WALL
	FENCE
	FENCE-DECORATIVE GUARD RAIL
	TREE LINE
	BUSH LINE

SURVEY LINES

	CONTROLLED ACCESS BOUNDARY
	CENTERLINE
	EXISTING EASEMENT LINE
	PROPOSED EASEMENT LINE
	EXISTING LOT LINE
	PROPOSED LOT LINE
	EXISTING RIGHT-OF-WAY
	PROPOSED RIGHT-OF-WAY
	SETBACK LINE
	SECTION LINE
	QUARTER LINE
	SIXTEENTH LINE
	TEMPORARY EASEMENT

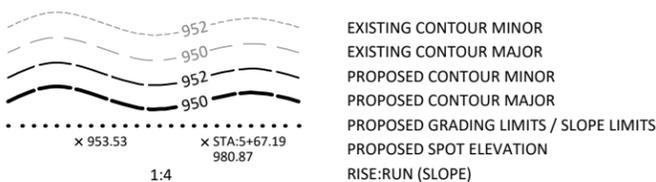
EXISTING UTILITY LINES

	FORCEMAIN
	SANITARY SEWER
	SANITARY SERVICE
	STORM SEWER
	STORM SEWER DRAIN TILE
	WATERMAIN
	WATER SERVICE

PROPOSED UTILITY LINES

	FORCEMAIN
	SANITARY SEWER
	SANITARY SERVICE
	STORM SEWER
	STORM SEWER DRAIN TILE
	WATERMAIN
	WATER SERVICE
	PIPE CASING

GRADING INFORMATION



HATCH PATTERNS

	BITUMINOUS		GRAVEL
	CONCRETE		

EXISTING PRIVATE UTILITY LINES

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	UNDERGROUND FIBER OPTIC
	UNDERGROUND ELECTRIC
	UNDERGROUND GAS
	UNDERGROUND COMMUNICATION
	OVERHEAD ELECTRIC
	OVERHEAD COMMUNICATION
	OVERHEAD UTILITY

UTILITIES IDENTIFIED WITH A QUALITY LEVEL :

LINE TYPES FOLLOW THE FORMAT: UTILITY TYPE - QUALITY LEVEL
 EXAMPLE: UNDERGROUND GAS, QUALITY LEVEL A
 UTILITY QUALITY LEVEL (A,B,C,D) DEFINITIONS CAN BE FOUND IN CI/ASCE 38-02.

UTILITY QUALITY LEVELS:

QUALITY LEVEL D: PROVIDES THE MOST BASIC LEVEL OF INFORMATION. IT INVOLVES COLLECTING DATA FROM EXISTING UTILITY RECORDS. RECORDS MAY INCLUDE AS-BUILT DRAWINGS, DISTRIBUTION AND SERVICES MAPS, EXISTING GEOGRAPHIC INFORMATION SYSTEM DATABASES, CONSTRUCTION PLANS, ETC.

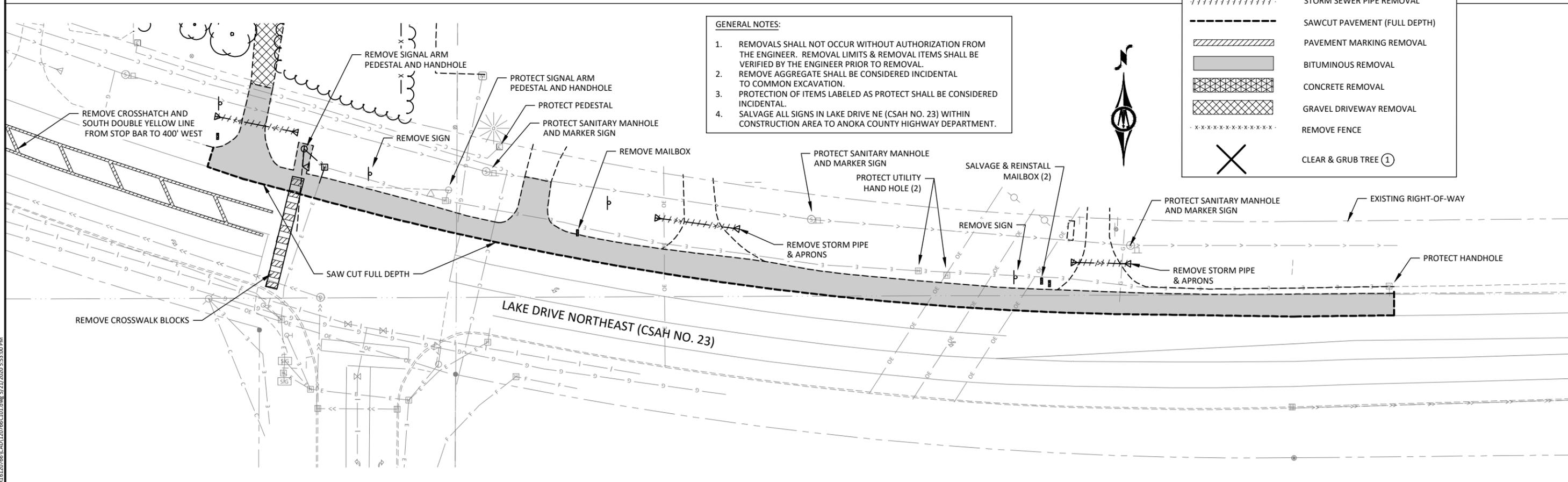
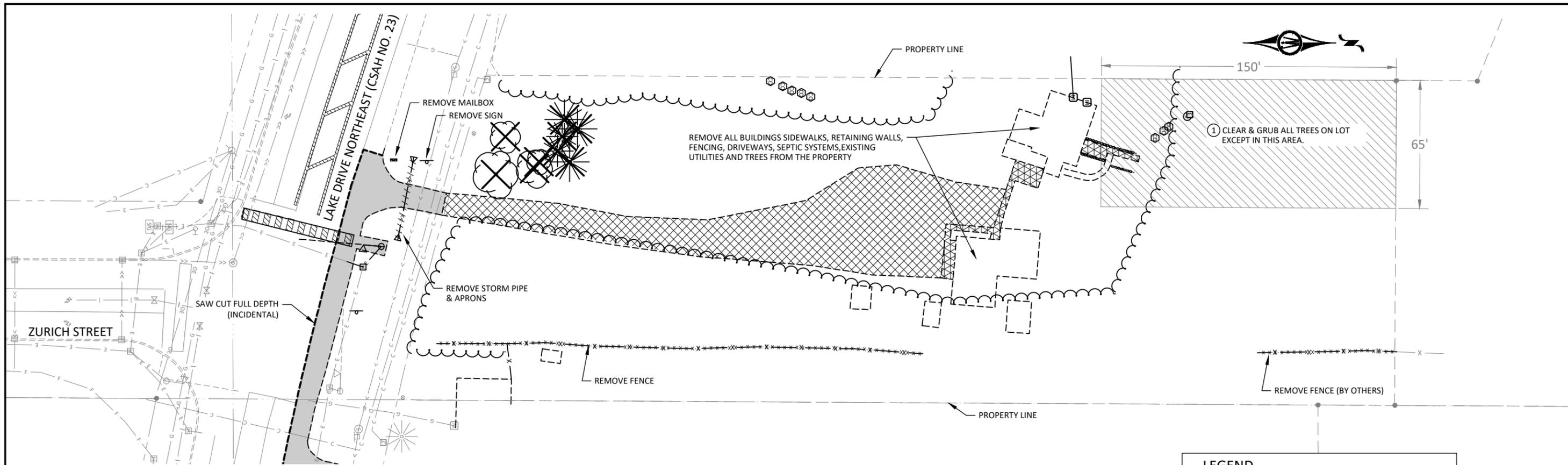
QUALITY LEVEL C: INVOLVES SURVEYING VISIBLE SUBSURFACE UTILITY STRUCTURES SUCH AS MANHOLES, HAND-HOLES, UTILITY VALVES AND METERS, FIRE HYDRANTS, PEDESTALS AND UTILITY MARKERS, AND THEN CORRELATING THE INFORMATION WITH EXISTING UTILITY RECORDS TO CREATE COMPOSITE DRAWINGS. INCLUDES QUALITY LEVEL D ACTIVITIES.

QUALITY LEVEL B: INVOLVES DESIGNATING THE HORIZONTAL POSITION OF SUBSURFACE UTILITIES THROUGH SURFACE DETECTION METHODS AND COLLECTING THE INFORMATION THROUGH A SURVEY METHOD. INCLUDES QUALITY LEVEL C AND D TASKS.

QUALITY LEVEL A: PROVIDES THE HIGHEST LEVEL OF ACCURACY. IT INVOLVES LOCATING OR POTHOLING UTILITIES AS WELL AS ACTIVITIES IN QUALITY LEVELS B, C, AND D. THE LOCATED FACILITY INFORMATION IS SURVEYED AND MAPPED AND THE DATA PROVIDES PRECISE PLAN AND PROFILE INFORMATION.

ABBREVIATIONS

A	ALGEBRAIC DIFFERENCE	GRAV	GRAVEL	RSC	RIGID STEEL CONDUIT
ADJ	ADJUST	GU	GUTTER	RT	RIGHT
ALT	ALTERNATE	GV	GATE VALVE	SAN	SANITARY SEWER
B-B	BACK TO BACK	HDPE	HIGH DENSITY POLYETHYLENE	SCH	SCHEDULE
BIT	BITUMINOUS	HH	HANDHOLE	SERV	SERVICE
BLDG	BUILDING	HP	HIGH POINT	SHLD	SHOULDER
BMP	BEST MANAGEMENT PRACTICE	HWL	HIGH WATER LEVEL	STA	STATION
BR	BEGIN RADIUS	HYD	HYDRANT	STD	STANDARD
BV	BUTTERFLY VALVE	I	INVERT	STM	STORM SEWER
CB	CATCH BASIN	K	CURVE COEFFICIENT	TC	TOP OF CURB
C&G	CURB AND GUTTER	L	LENGTH	TE	TEMPORARY EASEMENT
CIP	CAST IRON PIPE	LO	LOWEST OPENING	TEMP	TEMPORARY
CIPP	CURED-IN-PLACE PIPE	LP	LOW POINT	TNH	TOP NUT HYDRANT
CL	CENTER LINE	LT	LEFT	TP	TOP OF PIPE
CL	CLASS	MAX	MAXIMUM	TYP	TYPICAL
CLVT	CULVERT	MH	MANHOLE	VCP	VITRIFIED CLAY PIPE
CMP	CORRUGATED METAL PIPE	MIN	MINIMUM	VERT	VERTICAL
C.O.	CHANGE ORDER	MR	MID RADIUS	VPC	VERTICAL POINT OF CURVE
COMM	COMMUNICATION	NIC	NOT IN CONTRACT	VPI	VERTICAL POINT OF INTERSECTION
CON	CONCRETE	NMC	NON-METALLIC CONDUIT	VPT	VERTICAL POINT OF TANGENT
CSP	CORRUGATED STEEL PIPE	NTS	NOT TO SCALE	WM	WATERMAIN
DIA	DIAMETER	NWL	NORMAL WATER LEVEL		
DIP	DUCTILE IRON PIPE	OHW	ORDINARY HIGH WATER LEVEL		
DWY	DRIVEWAY	PC	POINT OF CURVE	AC	ACRES
E	EXTERNAL CURVE DISTANCE	PCC	POINT OF COMPOUND CURVE	CF	CUBIC FEET
ELEC	ELECTRIC	PE	PERMANENT EASEMENT	CV	COMPACTED VOLUME
ELEV	ELEVATION	PED	PEDESTRIAN, PEDESTAL	CY	CUBIC YARD
EOF	EMERGENCY OVERFLOW	PERF	PERFORATED PIPE	EA	EACH
ER	END RADIUS	PERM	PERMANENT	EV	EXCAVATED VOLUME
ESMT	EASEMENT	PI	POINT OF INTERSECTION	LB	POUND
EX	EXISTING	PL	PROPERTY LINE	LF	LINEAR FEET
FES	FLARED END SECTION	PRC	POINT OF REVERSE CURVE	LS	LUMP SUM
F-F	FACE TO FACE	PT	POINT OF TANGENT	LV	LOOSE VOLUME
FF	FINISHED FLOOR	PVC	POLYVINYL CHLORIDE PIPE	SF	SQUARE FEET
F&I	FURNISH AND INSTALL	PVMT	PAVEMENT	SV	STOCKPILE VOLUME
FM	FORCEMAIN	R	RADIUS	SY	SQUARE YARD
FO	FIBER OPTIC	R/W	RIGHT-OF-WAY		
F.O.	FIELD ORDER	RCP	REINFORCED CONCRETE PIPE		
GRAN	GRANULAR	RET	RETAINING		



- GENERAL NOTES:**
1. REMOVALS SHALL NOT OCCUR WITHOUT AUTHORIZATION FROM THE ENGINEER. REMOVAL LIMITS & REMOVAL ITEMS SHALL BE VERIFIED BY THE ENGINEER PRIOR TO REMOVAL.
 2. REMOVE AGGREGATE SHALL BE CONSIDERED INCIDENTAL TO COMMON EXCAVATION.
 3. PROTECTION OF ITEMS LABELED AS PROTECT SHALL BE CONSIDERED INCIDENTAL.
 4. SALVAGE ALL SIGNS IN LAKE DRIVE NE (CSAH NO. 23) WITHIN CONSTRUCTION AREA TO ANOKA COUNTY HIGHWAY DEPARTMENT.

LEGEND

- STORM SEWER PIPE REMOVAL
- SAWCUT PAVEMENT (FULL DEPTH)
- PAVEMENT MARKING REMOVAL
- BITUMINOUS REMOVAL
- CONCRETE REMOVAL
- GRAVEL DRIVEWAY REMOVAL
- REMOVE FENCE
- CLEAR & GRUB TREE ①



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.

Kevin F. Bittner
LIC. NO. 21814 DATE 05/21/2020

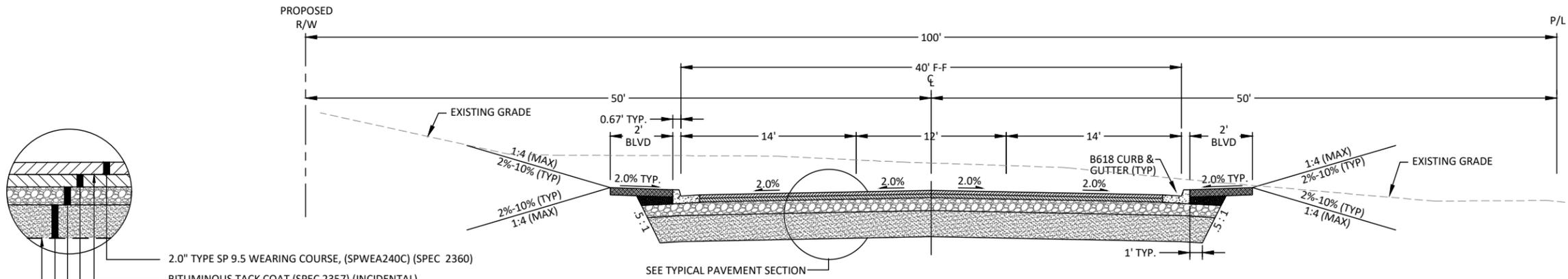


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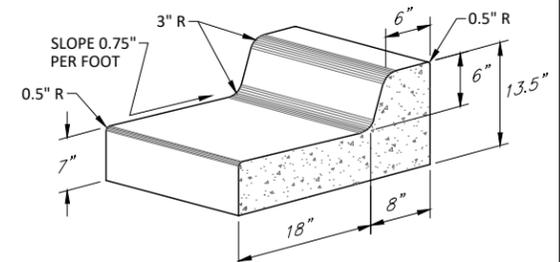
COLUMBUS, MINNESOTA
2020 ZURICH STREET EXTENSION
EXISTING CONDITIONS & REMOVALS

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TYPICAL STREET SECTION - ZURICH STREET NE

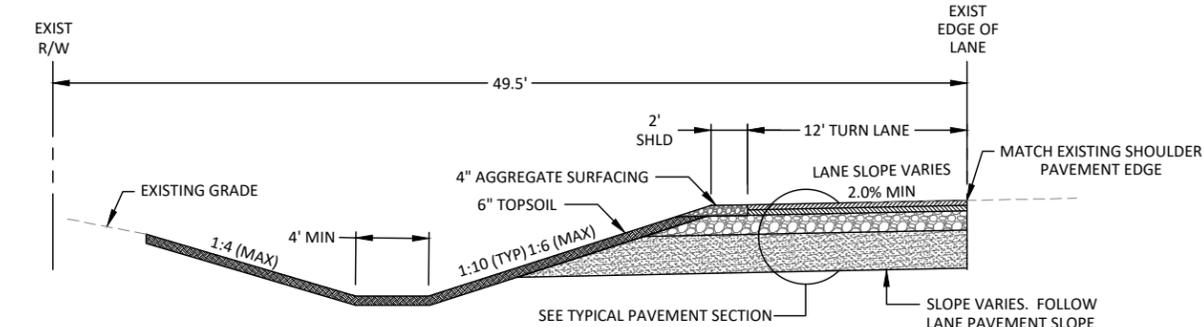
STA. 50+70 TO 53+40



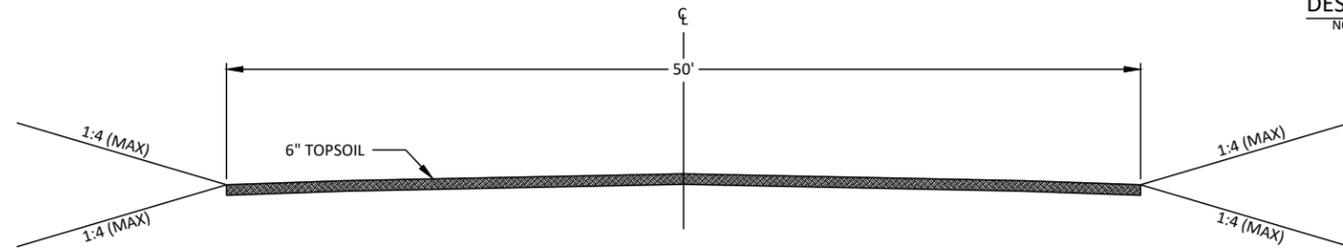
CONCRETE CURB & GUTTER
DESIGN B618
NOT TO SCALE

- 2.0" TYPE SP 9.5 WEARING COURSE, (SPWEA240C) (SPEC 2360)
- BITUMINOUS TACK COAT (SPEC 2357) (INCIDENTAL)
- 3.0" TYPE SP 12.5 NON WEARING COURSE, (SPNWB230C) (SPEC 2360)
- 8" AGGREGATE BASE, CL 5 (SPEC 2211)
- 12" SELECT GRANULAR BORROW (SPEC 2105)
- GEOTEXTILE FABRIC TYPE 5 (SPEC 2105.504)

TYPICAL PAVEMENT SECTION
N.T.S.

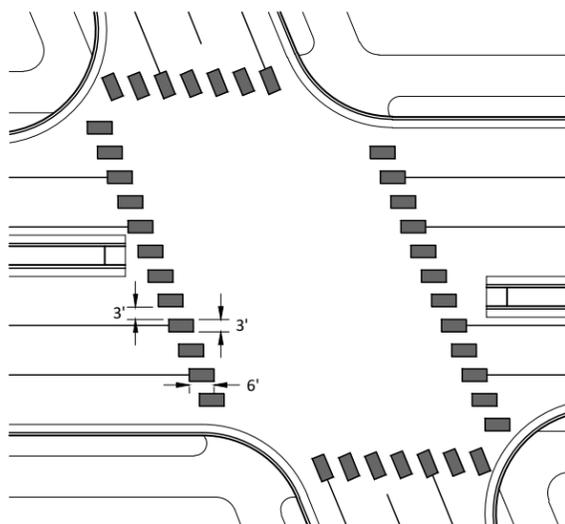


TURN LANE SECTION - LAKE DRIVE NE (CSAH NO. 23)
N.T.S.



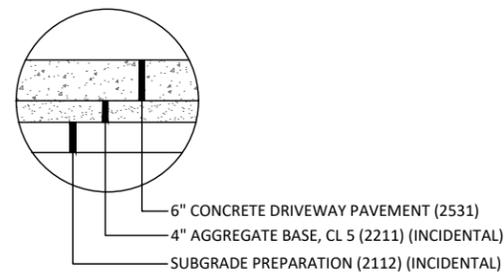
TYPICAL STREET SECTION - ZURICH STREET NE

STA. 50+40 TO 55+53

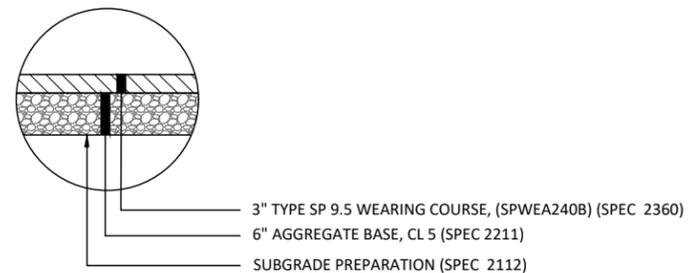


- NOTE:
1. PAINTED AREAS TO BE CENTERED ON CENTERLINE AND LANE LINES.
 2. A MINIMUM OF 18" CLEAR DISTANCE SHALL BE LEFT ADJACENT TO THE CURB. IF THE LAST PAINTED AREA FALLS INTO THIS DISTANCE, IT MUST BE OMITTED.
 3. FOR DIVIDED ROADWAYS, ADJUSTMENTS IN SPACING OF THE BLOCKS SHOULD BE MADE IN THE MEDIAN SO THAT THE BLOCKS ARE MAINTAINED IN THEIR PROPER LOCATION ACROSS THE TRAVELED PORTION OF THE ROADWAY.
 4. AT SKEWED CROSSWALKS, THE BLOCKS ARE TO REMAIN PARALLEL TO THE LANE LINES AS SHOWN.

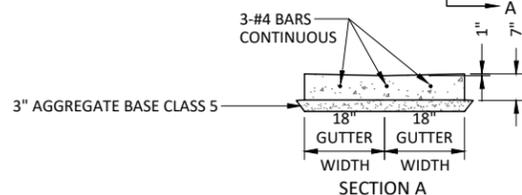
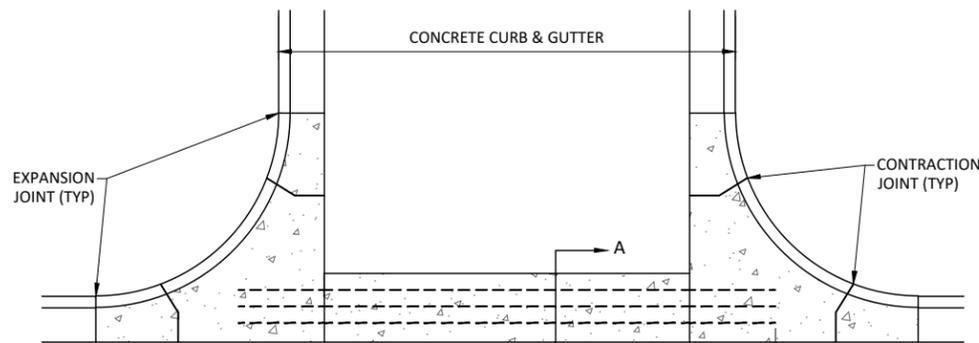
PEDESTRIAN CROSSWALK STRIPING



CONCRETE DRIVEWAY PAVEMENT
NOT TO SCALE



TYPICAL BITUMINOUS DRIVEWAY SECTION
NOT TO SCALE



CONCRETE VALLEY GUTTER
NOT TO SCALE

- NOTE:
1. NO CONTRACTION JOINTS IN VALLEY GUTTER
 2. THE CONCRETE VALLEY GUTTER SHALL BE CONSTRUCTED ON 3" AGGREGATE BASE, CLASS 5

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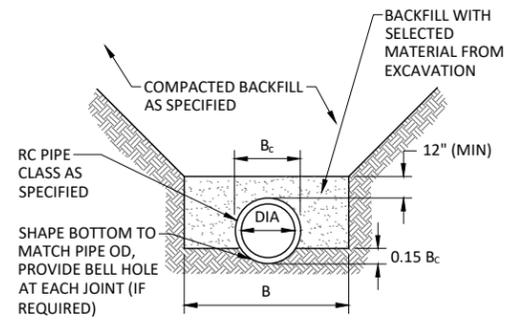
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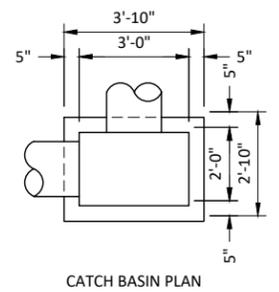
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COLUMBUS, MINNESOTA
2020 ZURICH STREET EXTENSION
GENERAL
TYPICAL SECTIONS

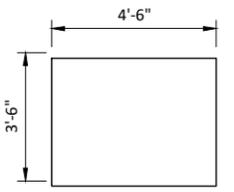


PIPE DIA	B
36" OR LESS	B _c + 24"
42" TO 54"	1.5 x B _c
60" OR OVER	B _c + 36"

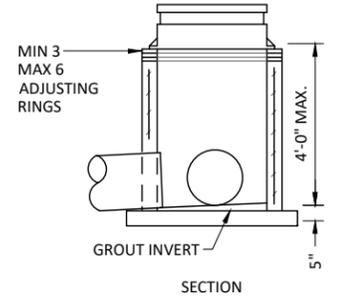
RC PIPE CLASS "C" BEDDING
NOT TO SCALE



CATCH BASIN PLAN



BASE SLAB PLAN

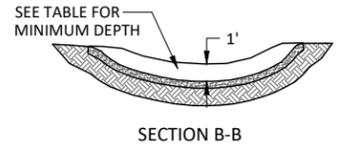


SECTION

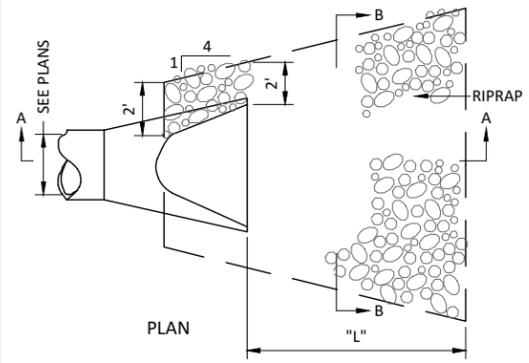
NOTES:

1. CASTING PER TABLE (SEE SHEET 3)
2. PIPE CUT-OUTS PER CONSTRUCTION DOCUMENTS
3. ALTERNATE CAST-IN-PLACE BASE CAN BE USED
4. MIN REINFORCING SHALL BE WIRE FABRIC HAVING AN AREA OF NOT LESS THAN 0.12 SQ IN PER FOOT IN BOTH DIRECTIONS

CATCH BASIN STRUCTURE DESIGN R-1 (2'x3')
NOT TO SCALE



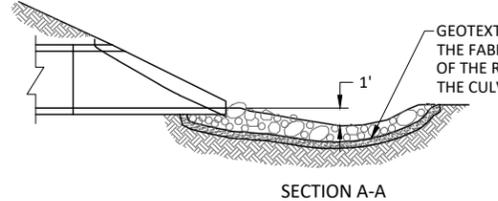
SECTION B-B



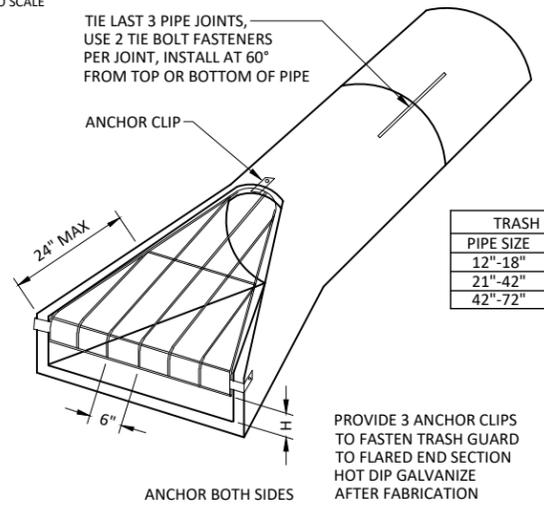
PLAN

DIA OF ROUND PIPE (IN)	L (FT)	CLASS II d50=6" 12" DEPTH RIPRAP (CU YD)	CLASS III d50=9" 18" DEPTH RIPRAP (CU YD)	CLASS IV d50=12" 24" DEPTH RIPRAP (CU YD)
12	8	5	8	10
15	8	5	8	10
18	10	6	10	15
21	10	8	15	15
24	12	10	15	20
27	12	10	15	20
30	14	15	20	25
36	16	18	25	30
42	18	20	30	40
48	20	20	40	50

RIPRAP AT RCP CULVERT END
NOT TO SCALE



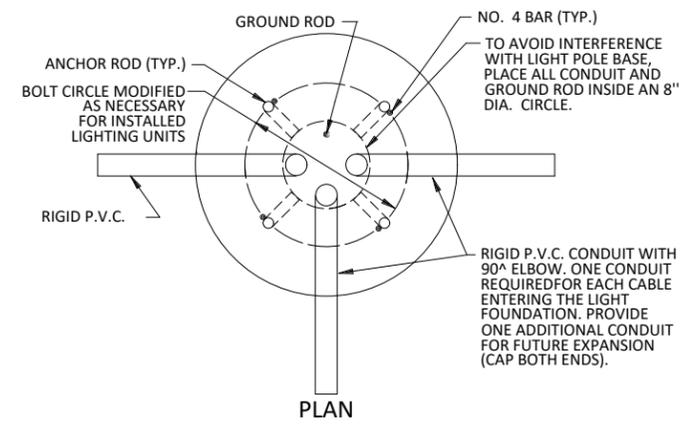
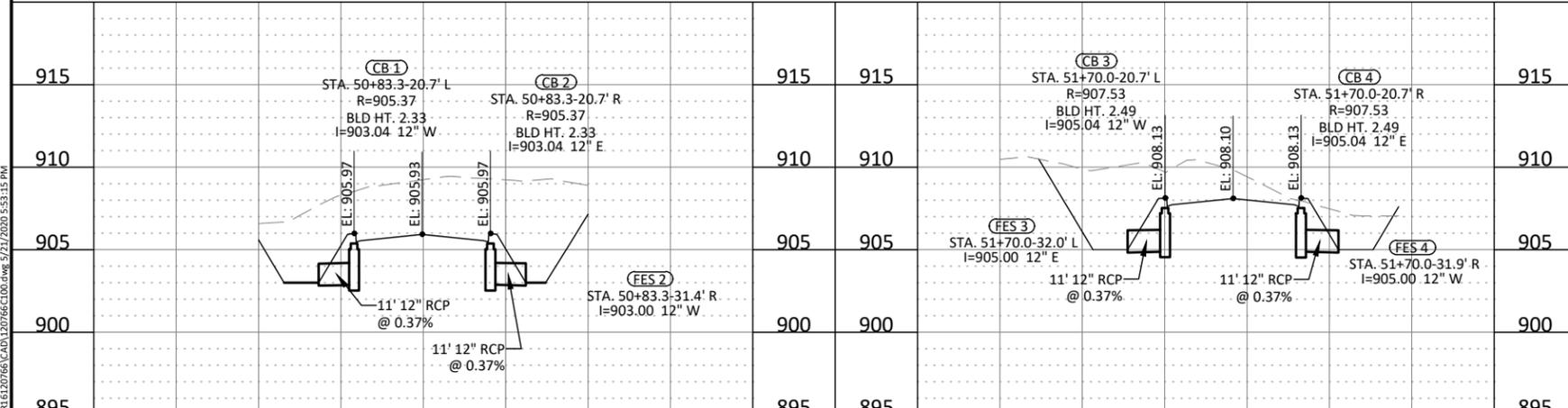
SECTION A-A



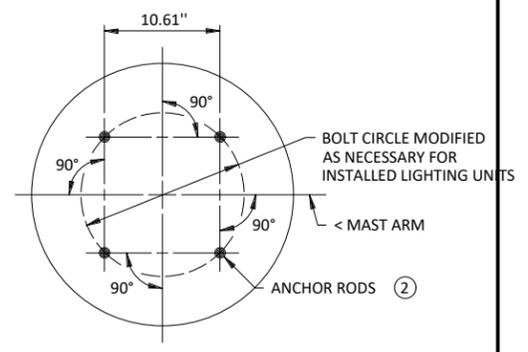
RC APRON TRASH RACK (STEEL BARS)
NOT TO SCALE

PIPE SIZE	BAR	"H"	BOLTS
12"-18"	3/4"Ø	4"	5/8"
21"-42"	1"Ø	6"	3/4"
42"-72"	1 1/4"Ø	12"	1"

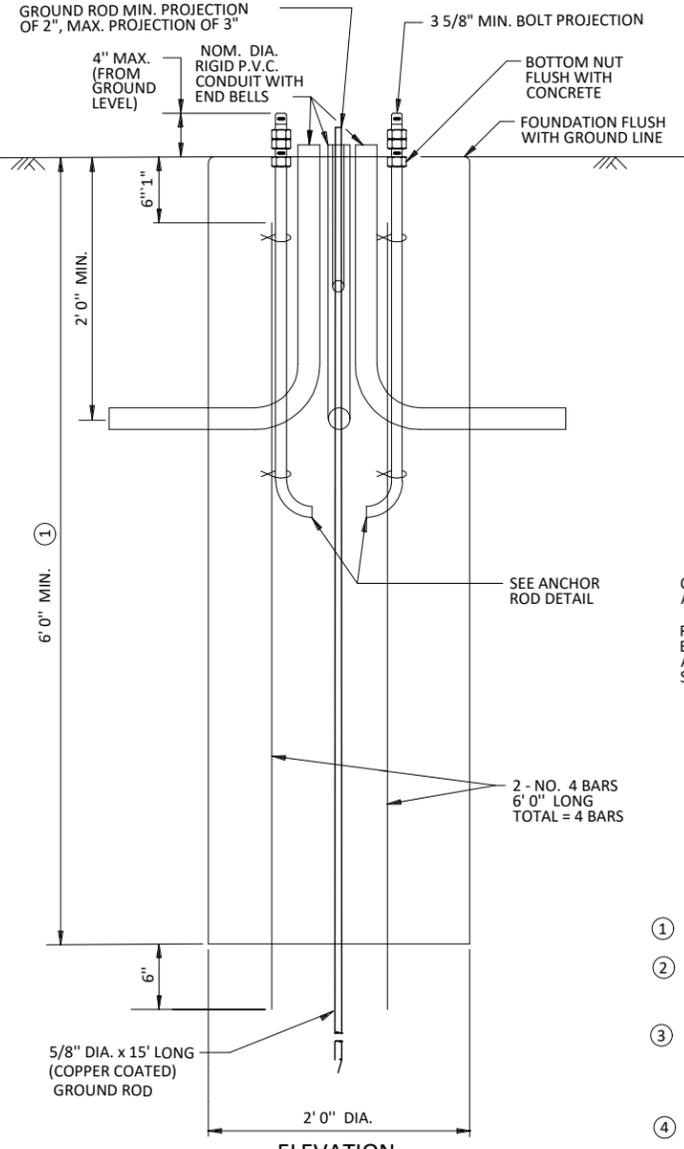
PROVIDE 3 ANCHOR CLIPS TO FASTEN TRASH GUARD TO FLARED END SECTION HOT DIP GALVANIZE AFTER FABRICATION



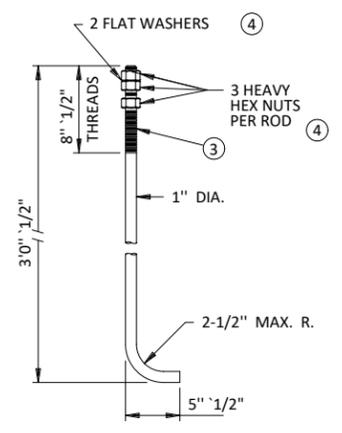
PLAN



ANCHOR ROD PLACEMENT



ELEVATION
CAST-IN-PLACE FOUNDATION



ANCHOR ROD DETAIL
4 REQUIRED

NOTES:

- CONCRETE SHALL BE MIX NO. 3Y43.
- FOUNDATIONS MAY BE CONSTRUCTED IN AUGERED HOLES UNLESS THE NATURAL SOILS WILL NOT STAND OPEN, IN WHICH CASE FORMING WILL BE REQUIRED.
- OPEN ENDS OF CONDUITS SHALL BE SEALED WITH AN APPROVED SEALING COMPOUND.
- RIGID P.V.C. CONDUIT PER SPEC. 3803 WITH END BELLS SHALL BE PROJECTED A MINIMUM 1/4" TO MAXIMUM 1" ABOVE THE FOUNDATION BEFORE MORTAR IS PLACED AND SHALL BE THE SIZE AND NUMBER SHOWN IN THE PLAN.
- A RIGID TEMPLATE SHALL BE PROVIDED FOR ANCHOR ROD AND CONDUIT PLACEMENT AND SHALL BE LEFT IN PLACE UNTIL THE CONCRETE HAS SET.
- ANTI-SEIZE COMPOUND THAT MEETS MIL-PRF-907E SPEC. SHALL BE APPLIED WITH A BRUSH TO ALL THREADS.
- WHEN ROCK IS ENCOUNTERED, SEE PLAN DETAILS.
- ALL BACKFILLING AND EXCAVATION AROUND FOUNDATION MUST BE IN ACCORDANCE WITH 2451 AND 2545.3.
- ALL EXCAVATIONS MUST BE PROPERLY COMPACTED IN ACCORDANCE WITH 2451.
- LEVELING SHIMS SHALL BE USED WHEN PLACING ALUMINUM POLES. SEE STANDARD PLATE 8129.
- 1 THE DEPTH OF THE FOUNDATION MAY VARY IN THE PLANS OR SPECIAL PROVISIONS.
- 2 ANCHOR RODS, NUTS, AND WASHERS PER SPEC. 3385, TYPE A, SHALL BE PLACED AT RIGHT ANGLES TO THE DIRECTION OF THE MAST ARM. GALVANIZE THE TOP 1 FT. OF THE ANCHOR ROD AND NUTS PER SPEC. 3392.
- 3 WRAP THREADS OF ANCHOR RODS ABOVE THE BOTTOM NUT WITH VINYL ELECTRICAL TAPE TO AVOID CONTAMINATION DURING CONCRETE POURING. WRAP THREADS OF ANCHOR RODS WITH 3 LAYERS OF VINYL ELECTRICAL TAPE 2" BELOW THE BOTTOM NUTS.
- 4 USE 1 HOLDDOWN WASHER AND 2 HEAVY HEX NUTS PER ROD FOR ALUMINUM POLE INSTALLATION.

LIGHT BASE DESIGN E MODIFIED



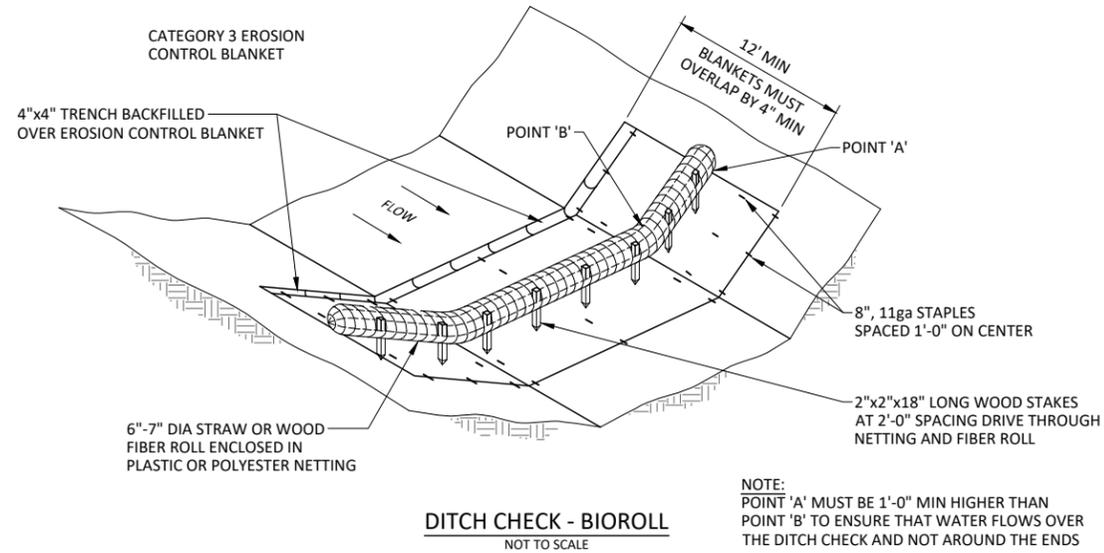
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Kevin F. Bittner
LIC. NO. 21814 DATE 05/21/2020



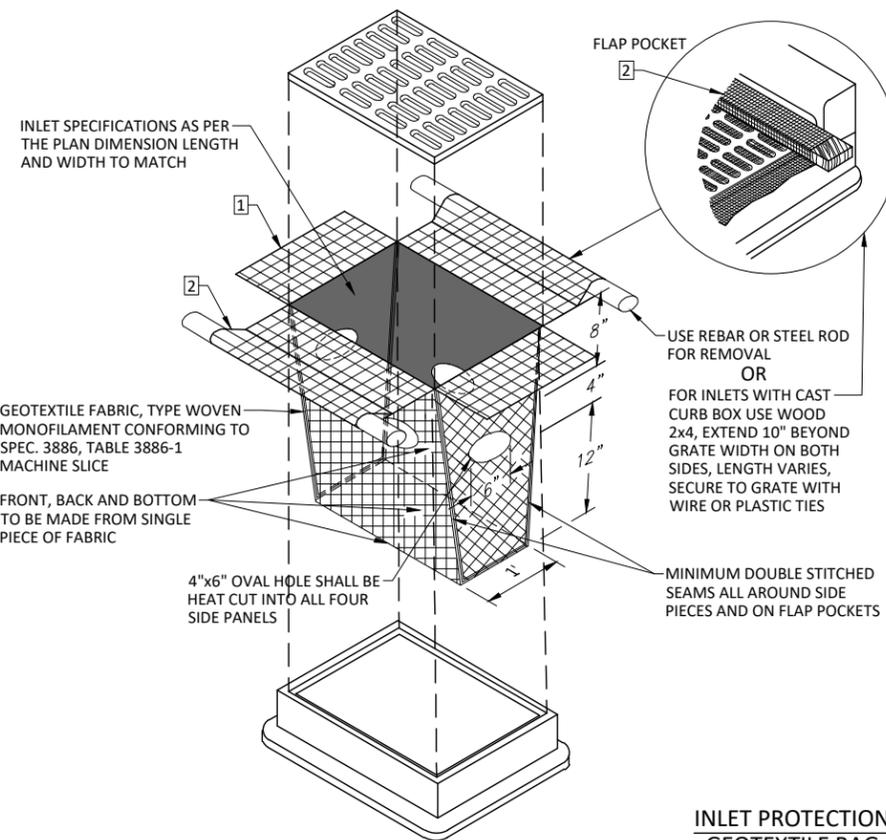
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COLUMBUS, MINNESOTA
2020 ZURICH STREET EXTENSION
STORM DETAILS



DITCH CHECK - BIOROLL
NOT TO SCALE

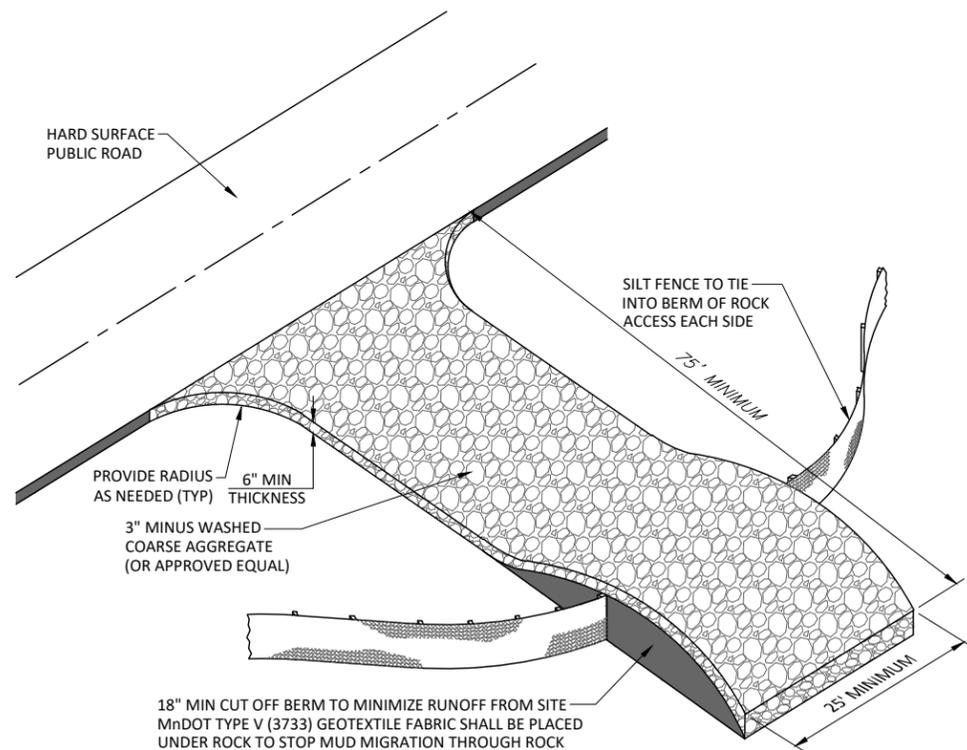


**INLET PROTECTION
GEOTEXTILE BAG**
NOT TO SCALE

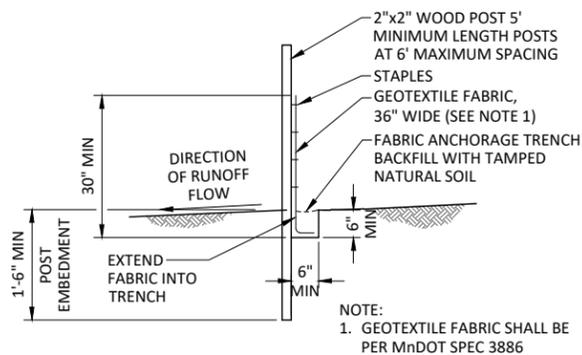
NOTES:
 1 INLET PROTECTION DEVICES SHALL BE MAINTAINED OR REPLACED AT THE DIRECTION OF THE ENGINEER. MANUFACTURED ALTERNATIVES APPROVED AND LISTED ON THE DEPARTMENTS EROSION CONTROL PRODUCT ACCEPTABILITY LIST MAY BE SUBSTITUTED. WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL IN THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.
 2 FINISHED SIZE, INCLUDING POCKETS WHERE REQUIRED, SHALL EXTEND A MINIMUM OF 10" AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.

FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2x4.
INSTALLATION NOTES:
 DO NOT INSTALL PROTECTION IN INLETS SHALLOWER THAN 30", MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE.
 TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.

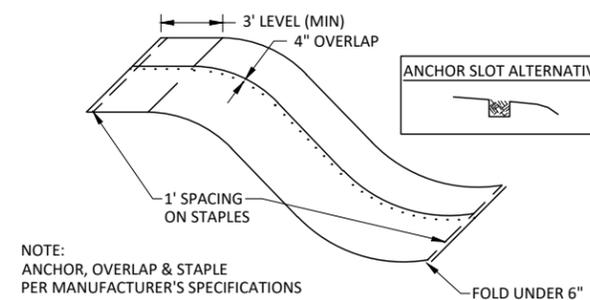
THE INSTALLED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE, BETWEEN THE INLET AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES, OF 3". WHERE NECESSARY THE CONTRACTOR SHALL CLINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3" CLEARANCE. THE TIES SHALL BE PLACED AT A MAXIMUM OF 4" FROM THE BOTTOM OF THE BAG.



ROCK CONSTRUCTION ENTRANCE
NOT TO SCALE



SILT FENCE - PREASSEMBLED
NOT TO SCALE



EROSION CONTROL BLANKET INSTALLATION
NOT TO SCALE

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 Kevin F. Bittner
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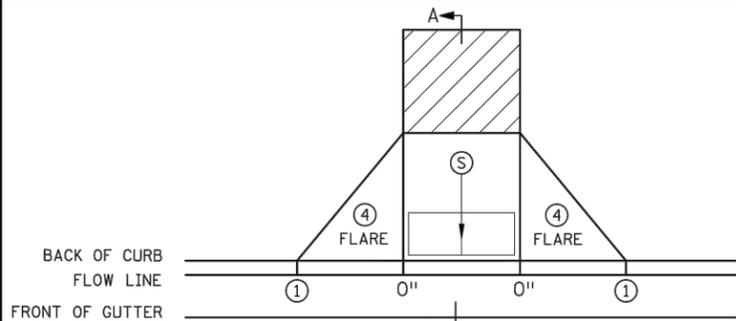
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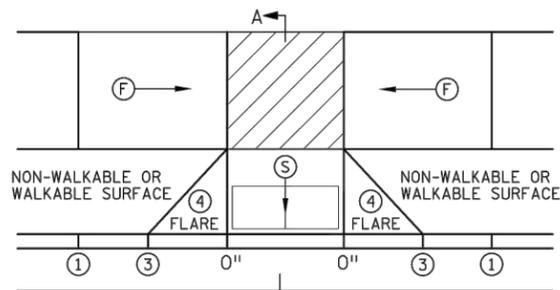
COLUMBUS, MINNESOTA
 2020 ZURICH STREET EXTENSION
 EROSION CONTROL DETAILS

PLOTTED/REVISED: 4-APR-2018

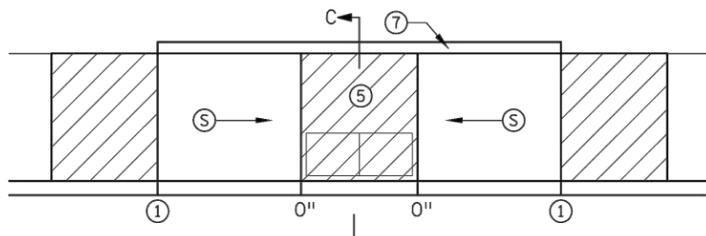
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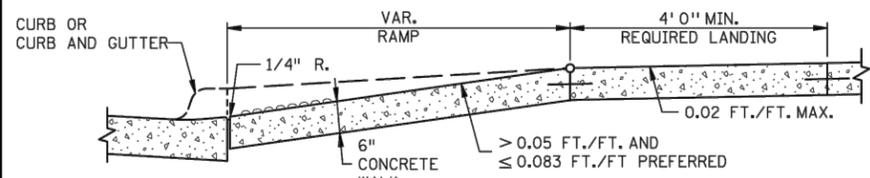
PERPENDICULAR



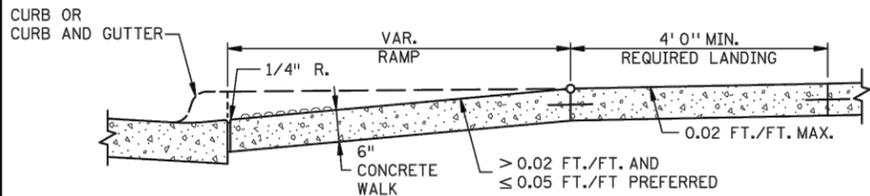
TIERED PERPENDICULAR



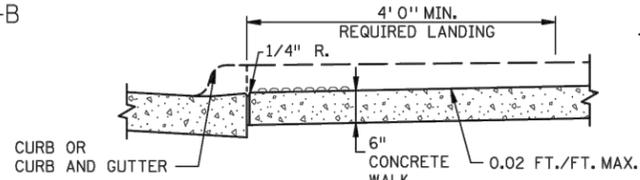
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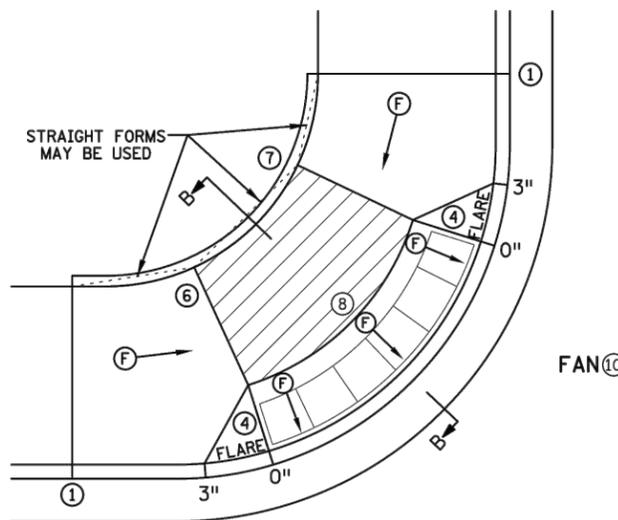
SECTION A-A
 PERPENDICULAR/TIERED/DIAGONAL



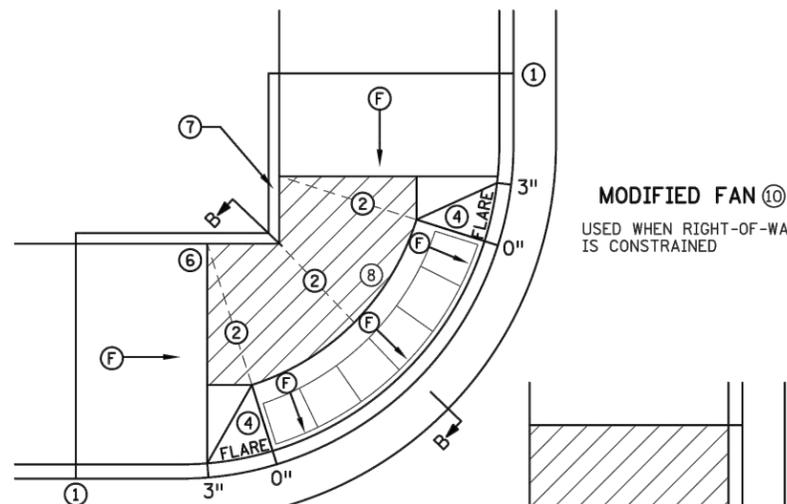
SECTION B-B
 FAN



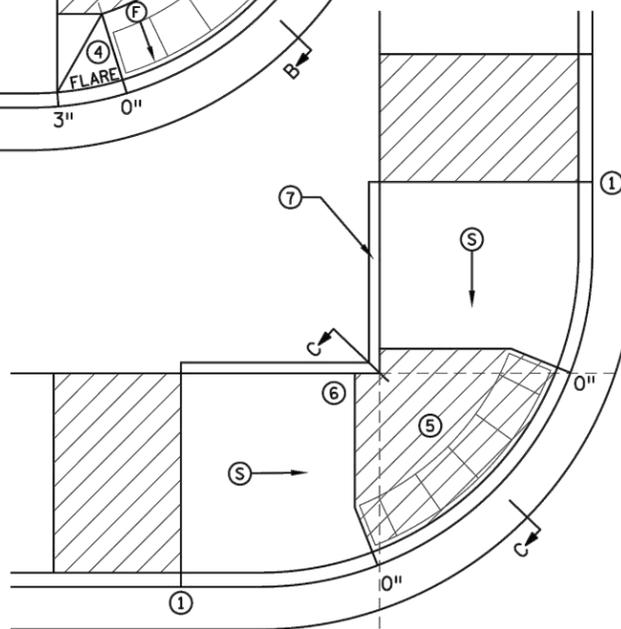
SECTION C-C
 PARALLEL/DEPRESSED CORNER



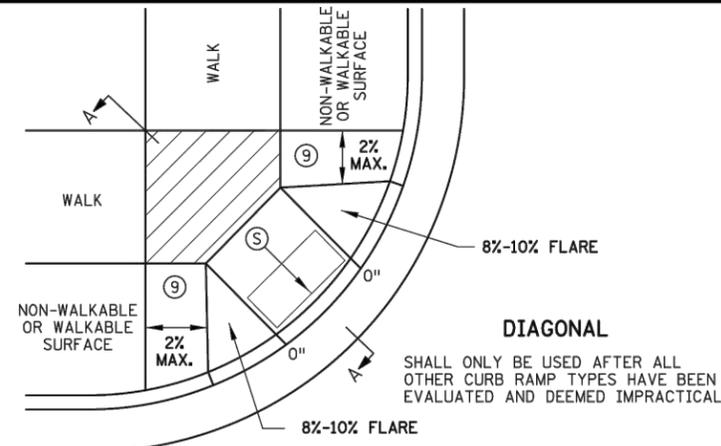
FAN ⑩



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



DEPRESSED CORNER



DIAGONAL

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

NOTES:

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

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

REVISIONS:
APPROVED: JANUARY 23, 2017
OPERATIONS ENGINEER



STANDARD PLAN 5-297.250 1 OF 6

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

STATE PROJ. NO.

PEDESTRIAN CURB RAMP DETAILS

(T.H.) SHEET NO. OF SHEETS

COLUMBUS, MINNESOTA

2020 ZURICH STREET EXTENSION

PEDESTRIAN CURB RAMP DETAILS

SHEET 8 OF 37

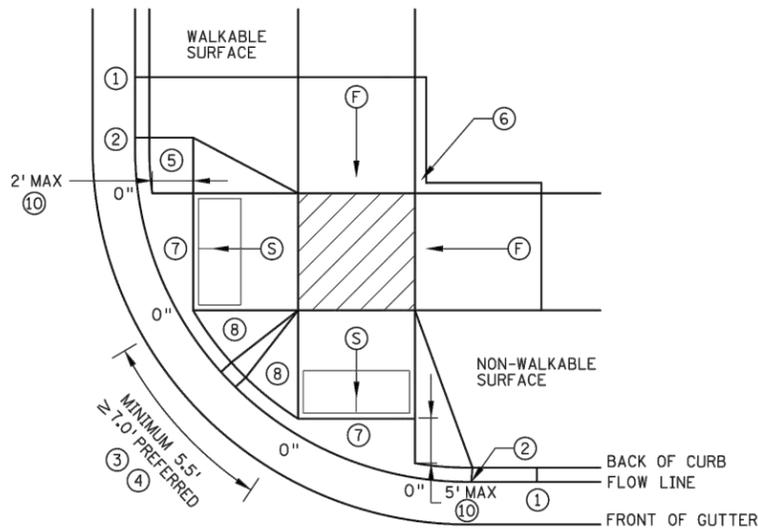


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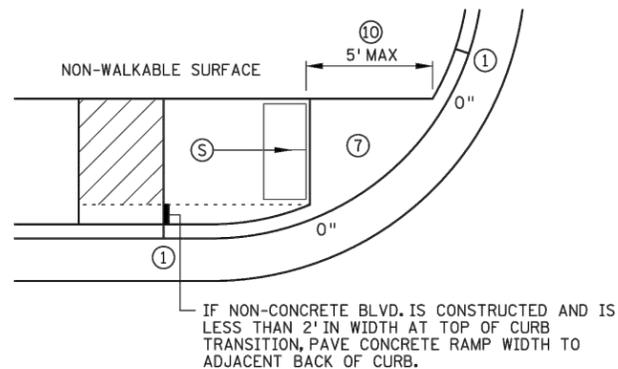
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PLOTTED/REVISED: 4-APR-2018

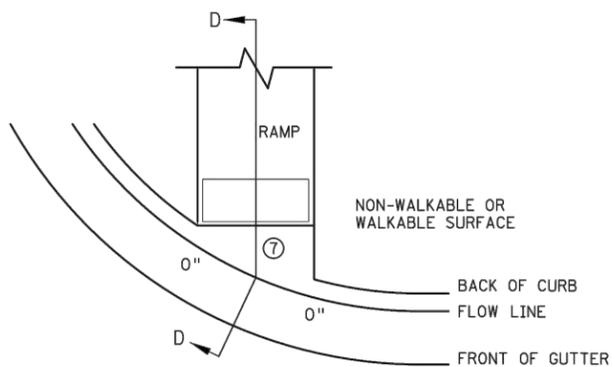
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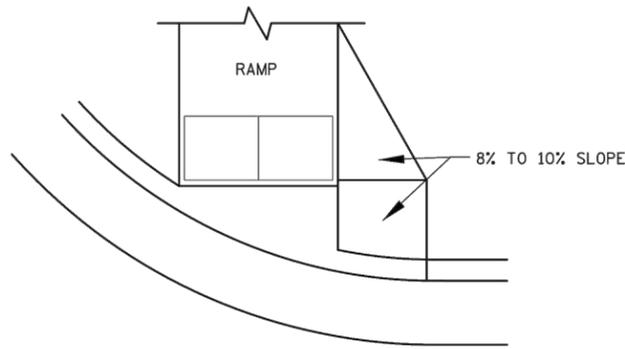
COMBINED DIRECTIONAL ⑨



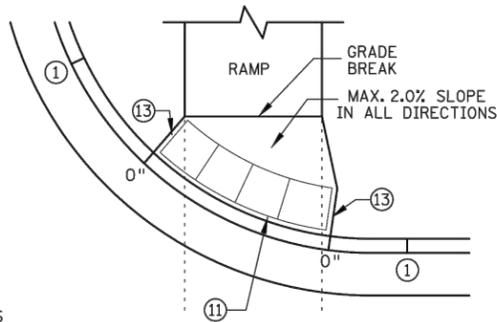
STANDARD ONE-WAY DIRECTIONAL ⑨



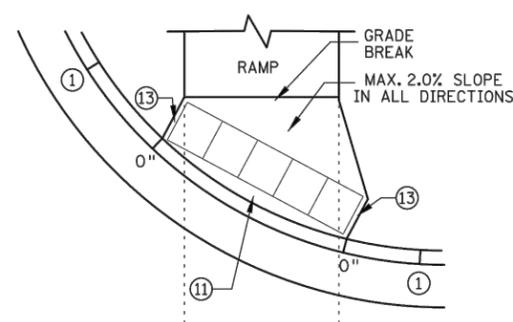
CURB FOR DIRECTIONAL RAMPS ⑭



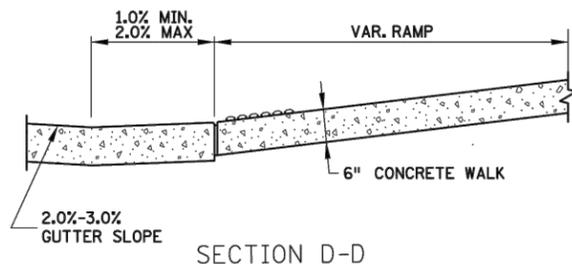
DIRECTIONAL RAMP WALKABLE FLARE



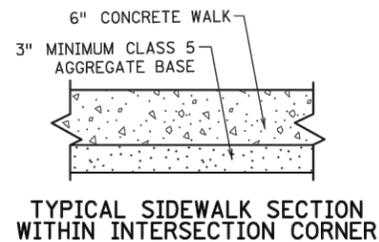
DETECTABLE WARNING PLACEMENT WHEN SETBACK CRITERIA IS EXCEEDED



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.

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

REVISIONS:
APPROVED: JANUARY 23, 2017
<i>[Signature]</i> OPERATIONS ENGINEER

m MINNESOTA DEPARTMENT OF TRANSPORTATION	STANDARD PLAN 5-297.250	2 OF 6
	APPROVED: 1-23-2017 REVISOR: <i>[Signature]</i> STATE DESIGN ENGINEER	
STATE PROJ. NO.		(T.H.) SHEET NO. OF SHEETS

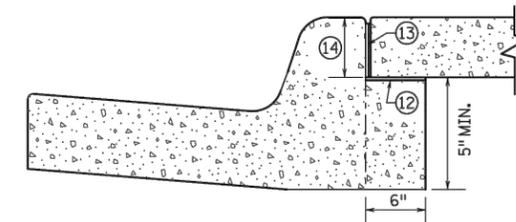
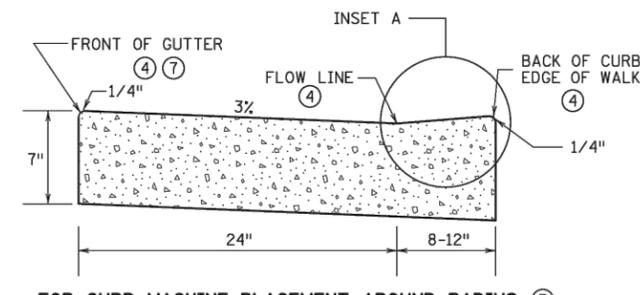
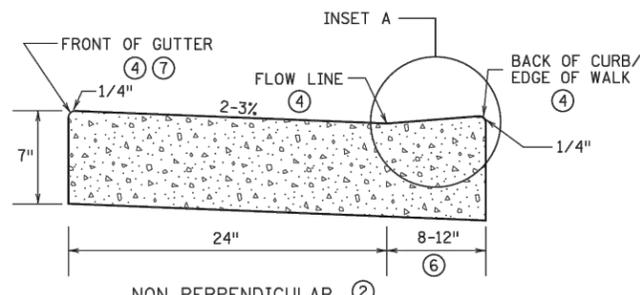
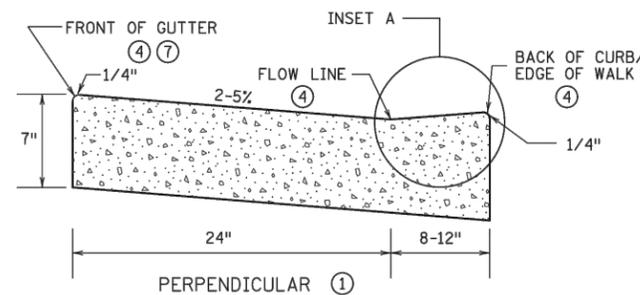
PEDESTRIAN CURB RAMP DETAILS

COLUMBUS, MINNESOTA
2020 ZURICH STREET EXTENSION
PEDESTRIAN CURB RAMP DETAILS

DESIGNED	DRAWN	CHECKED	CLIENT PROJ. NO.
KFB	KGA	KFB	R16.120766

PLOTTED/REVISED: 4-APR-2018

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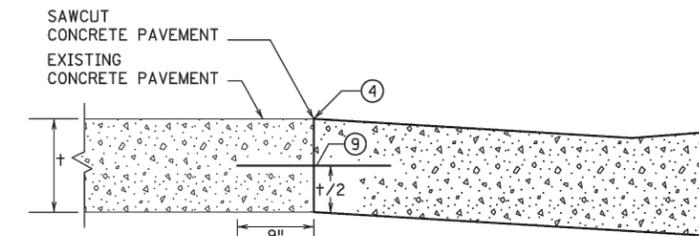
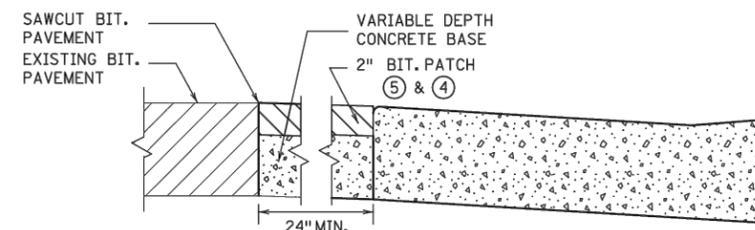
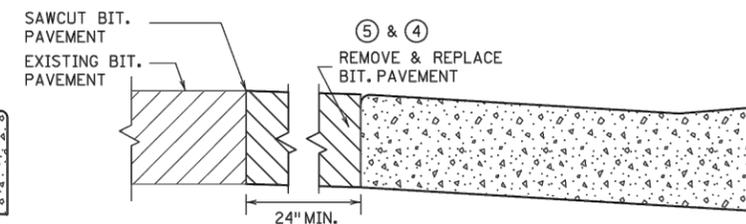
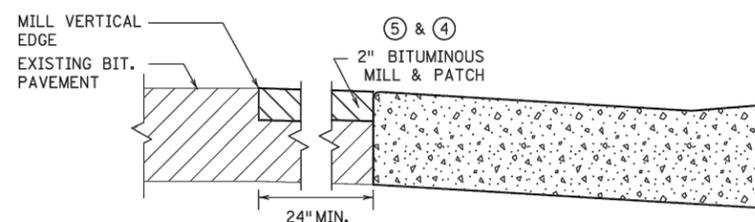
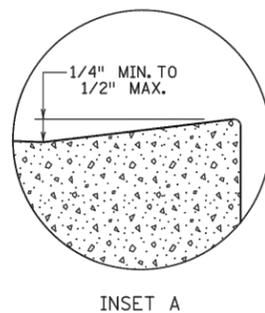
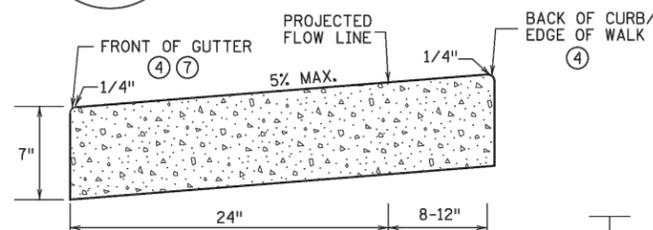
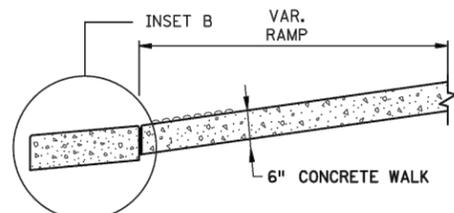


PEDESTRIAN ACCESS ROUTE CURB & GUTTER DETAIL

(REGARDLESS OF RAMP TYPE)

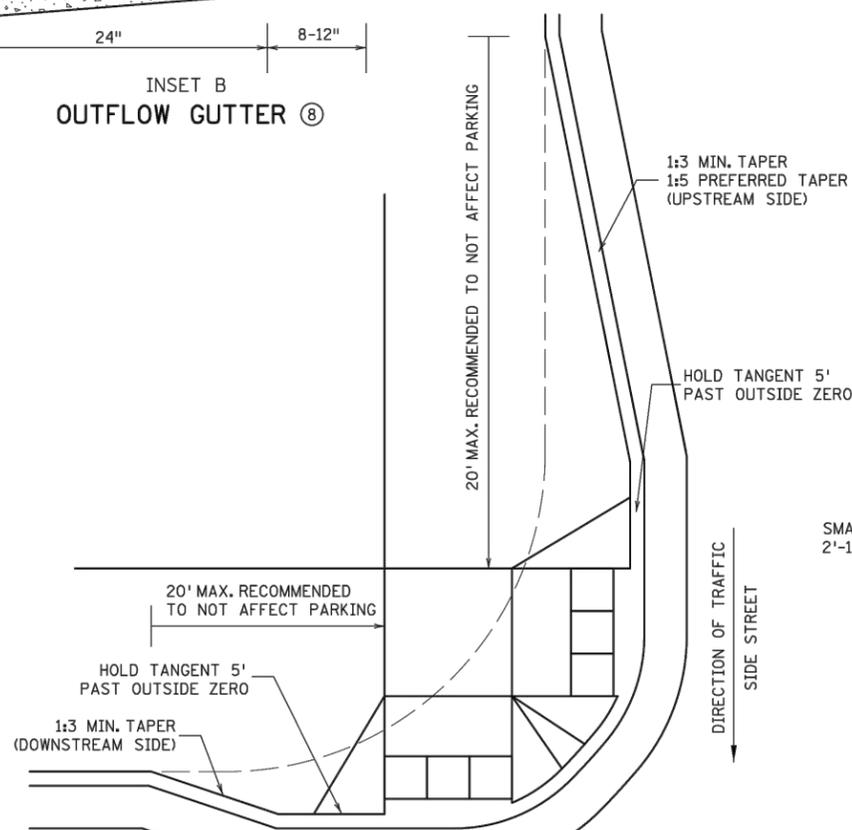
OPTIONAL SILL CURB WHEN SIDEWALK IS AT BACK OF CURB

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

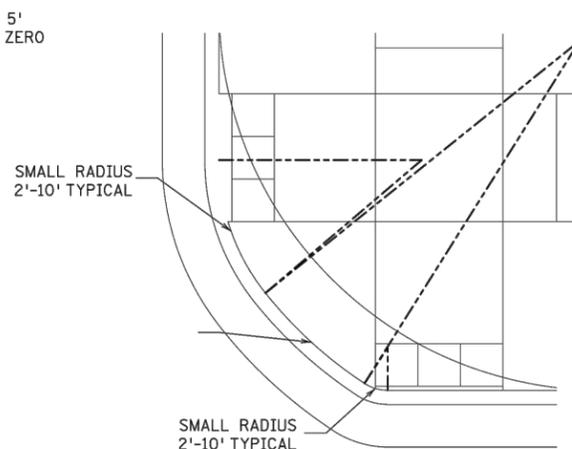


ONLY ALLOWED PER ENGINEER'S APPROVAL

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



ADA CURB EXTENSION WITH COMPOUND RADIUS (BUMP OUT) 10



COMBINED DIRECTIONAL 10
 (COMPOUND RADIUS)

NOTES:

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

REVISIONS:
APPROVED: JANUARY 23, 2017
<i>[Signature]</i> OPERATIONS ENGINEER



STANDARD PLAN 5-297.250

3 OF 6

PEDESTRIAN CURB RAMP DETAILS

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

STATE PROJ. NO.

(T.H.) SHEET NO. OF SHEETS



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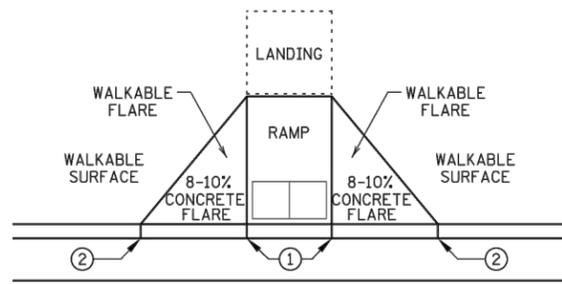
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KFB	KGA	KFB	R16.120766

COLUMBUS, MINNESOTA
 2020 ZURICH STREET EXTENSION
 PEDESTRIAN CURB RAMP DETAILS

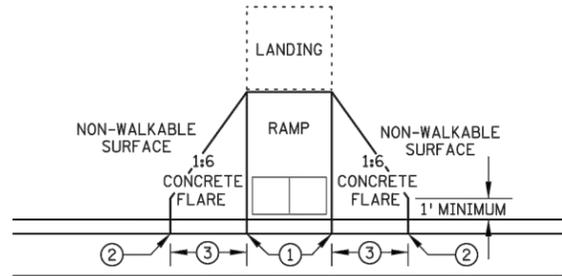
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PLOTTED/REVISED: 4-APR-2018

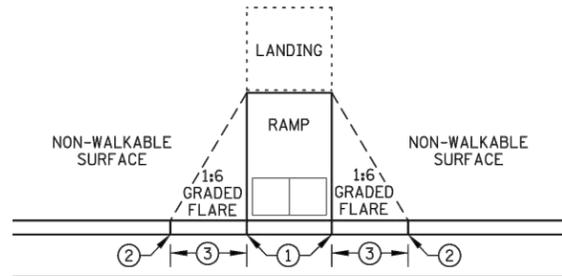
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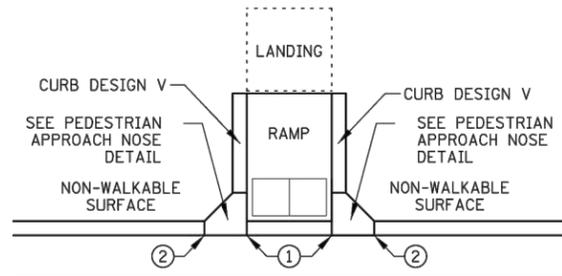
PAVED FLARES
ADJACENT TO WALKABLE SURFACE



PAVED FLARES
ADJACENT TO NON-WALKABLE SURFACE

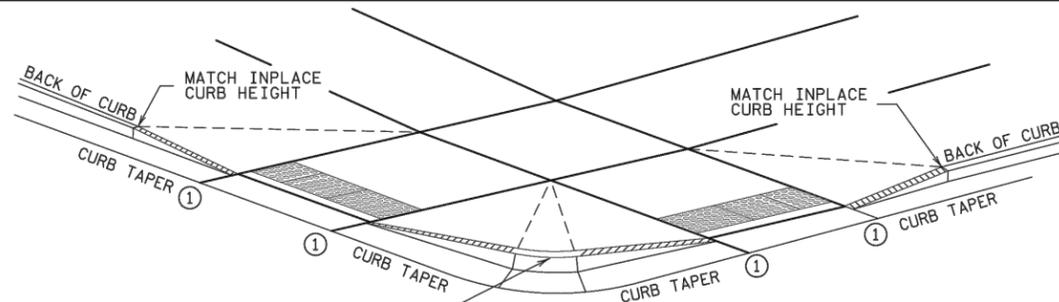


GRADED FLARES



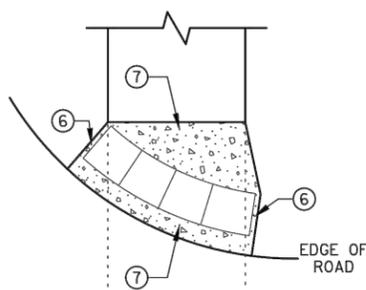
RETURNED CURB ⑤

TYPICAL SIDE TREATMENT OPTIONS ④ ⑩

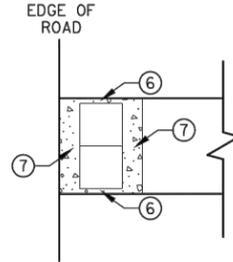


3" MINIMUM CURB HEIGHT, 4" PREFERRED
 (MEASURED AT FRONT FACE OF CURB)
 FOR A MIN. 6" LENGTH (MEASURED ALONG FLOW LINE)

DETECTABLE EDGE WITH ⑧
CURB AND GUTTER

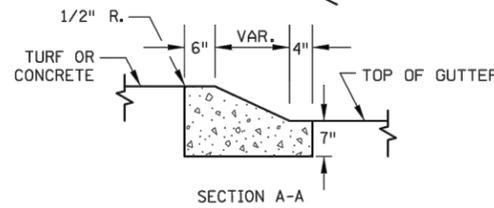
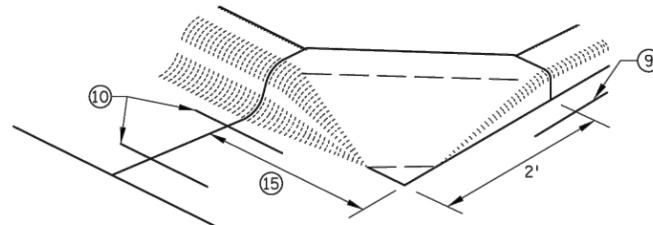


RADIAL DETECTABLE WARNING

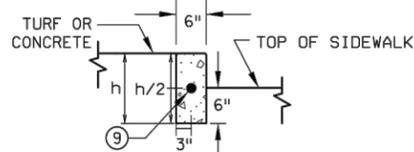


RECTANGULAR DETECTABLE WARNING

DETECTABLE EDGE WITHOUT CURB AND GUTTER

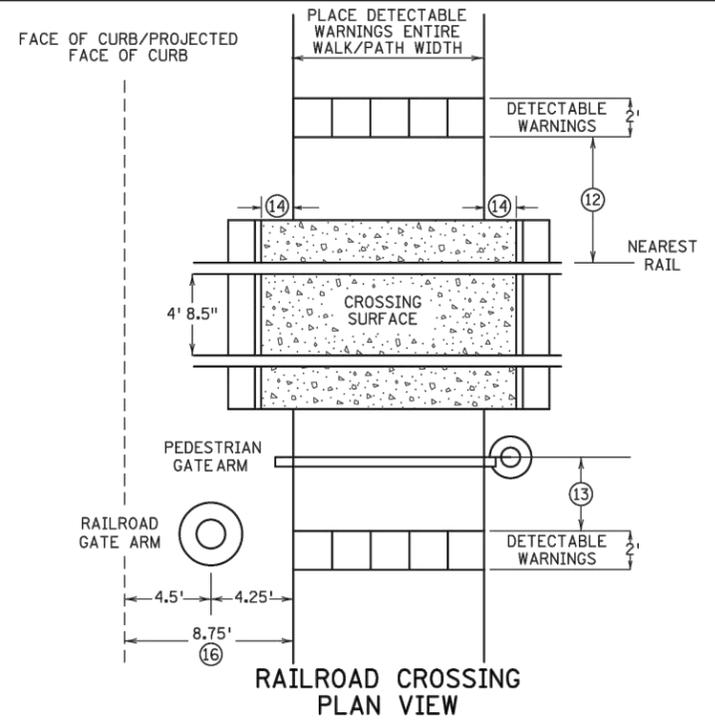


SECTION A-A



SECTION B-B

PEDESTRIAN APPROACH
NOSE DETAIL
(FOR RETURNED CURB
SIDE TREATMENT)



RAILROAD CROSSING
PLAN VIEW

NOTES:

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

REVISIONS:
APPROVED: JANUARY 23, 2017
OPERATIONS ENGINEER

STANDARD PLAN 5-297.250 4 OF 6

APPROVED: 1-23-2017
 REVISED:

STATE PROJ. NO. (T.H.) SHEET NO. OF SHEETS

DESIGNED: KFB
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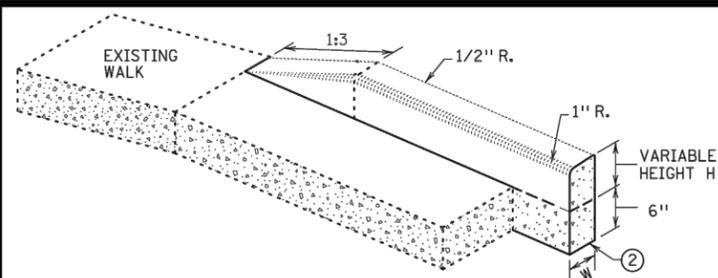
PEDESTRIAN CURB RAMP DETAILS

COLUMBUS, MINNESOTA
 2020 ZURICH STREET EXTENSION
 PEDESTRIAN CURB RAMP DETAILS

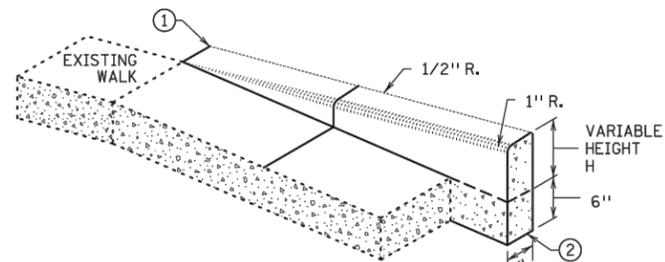
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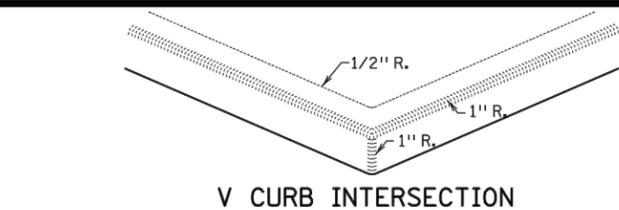
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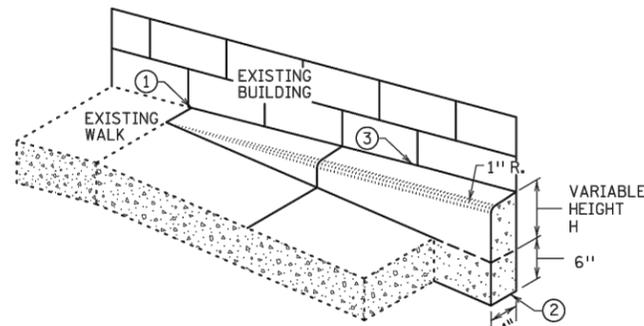
V CURB ADJACENT TO LANDSCAPE
 CURB WITHIN SIDEWALK LIMITS



V CURB ADJACENT TO LANDSCAPE
 CURB OUTSIDE SIDEWALK LIMITS

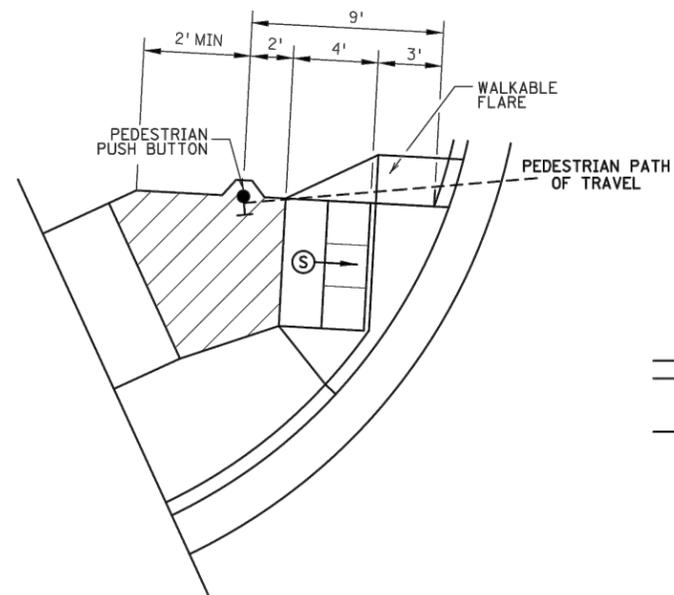


V CURB INTERSECTION



V CURB ADJACENT TO BUILDING
 OR BARRIER

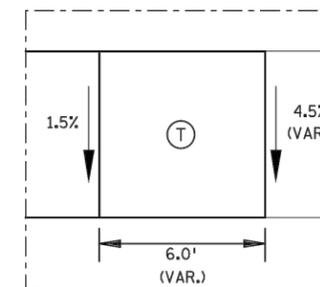
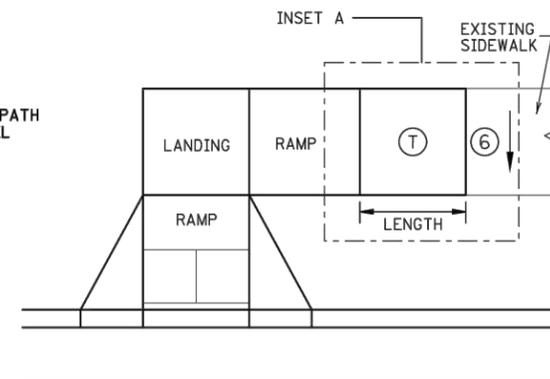
CONCRETE CURB DESIGN V	
CURB HEIGHT H	CURB WIDTH W
< 6"	4"
≥ 6"	6"



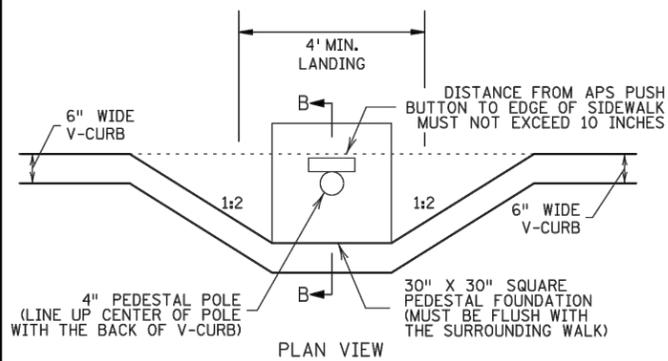
SEMI-DIRECTIONAL RAMP (3,4,9)

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

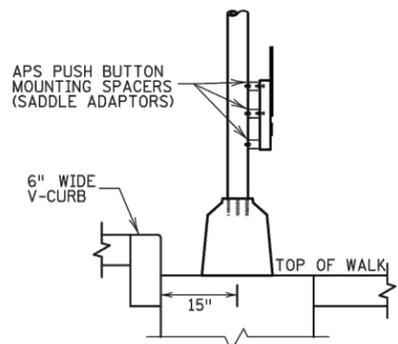
PRIMARYLY USED FOR APS APPLICATIONS
 WHERE THE PAR DOES NOT CONTINUE PAST
 THE PUSH BUTTON (DEAD-END SIDEWALK)



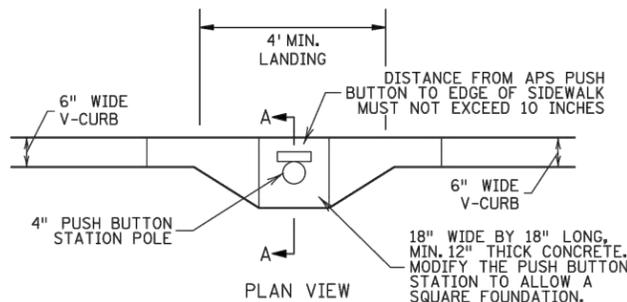
TRANSITION PANEL (4,5)



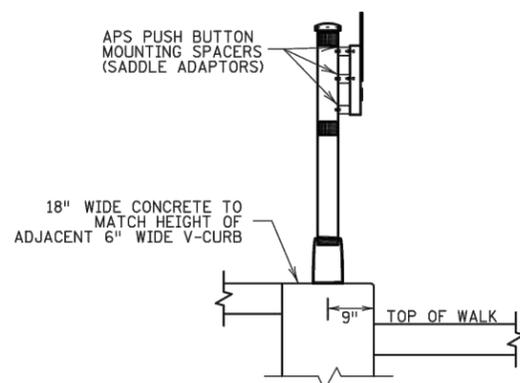
SIGNAL PEDESTAL & PUSH BUTTON (V-CURB)



SECTION B-B



PUSH BUTTON STATION (V-CURB)



SECTION A-A

NOTES:

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

LEGEND

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

REVISIONS:
APPROVED: JANUARY 23, 2017
OPERATIONS ENGINEER



STANDARD PLAN 5-297.250 5 OF 6

APPROVED: 1-23-2017
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PEDESTRIAN CURB RAMP DETAILS

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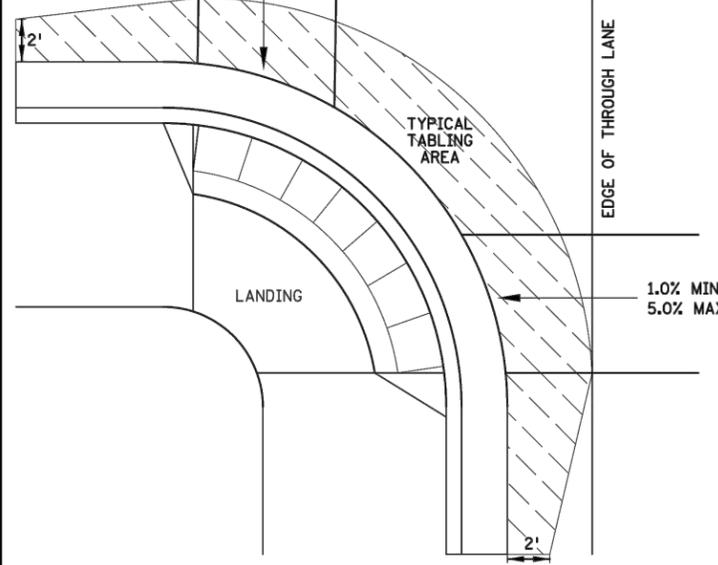
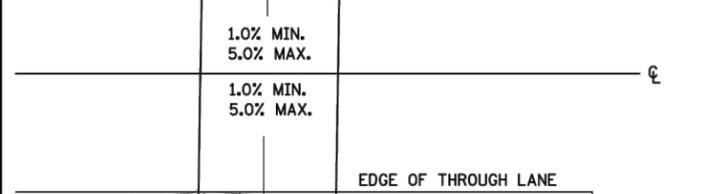
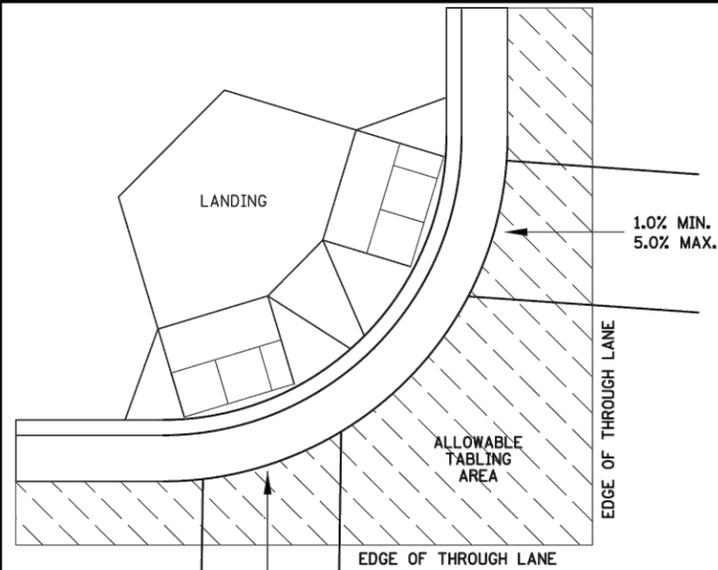
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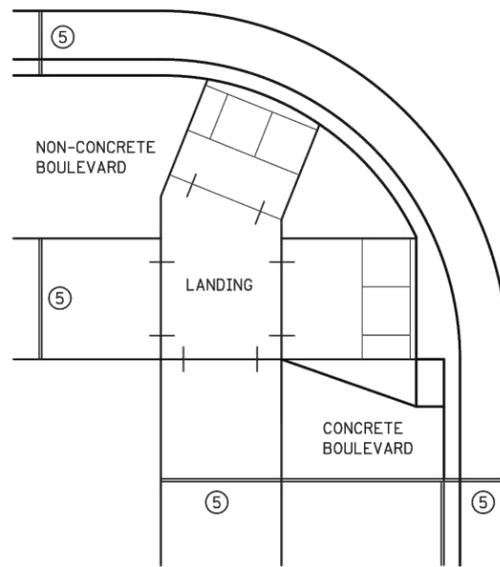
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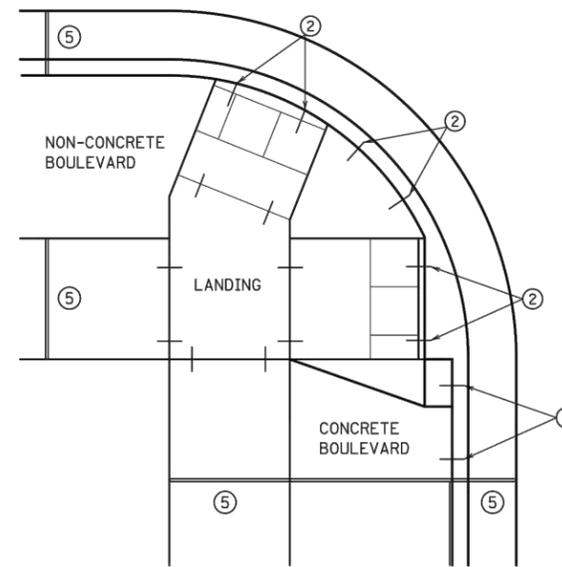
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CURB LINE AND ROAD CROSSING ADJUSTMENTS



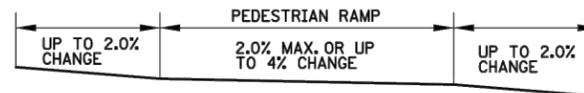
EXPANSION MATERIAL PLACEMENT FOR CONCRETE AND BITUMINOUS ROADWAYS



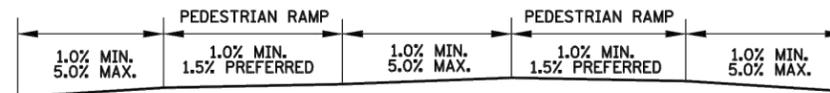
OPTIONAL CURB LINE REINFORCEMENT PLACEMENT ON BITUMINOUS ROADWAYS



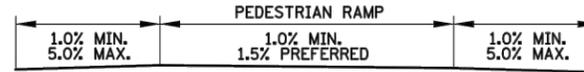
FLOW LINE PROFILE "TABLE" - TWIN PERPENDICULARS



FLOW LINE PROFILE "TABLE" - FAN



FLOW LINE PROFILE RAISE - TWIN PERPENDICULARS



FLOW LINE PROFILE RAISE - FAN

"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.

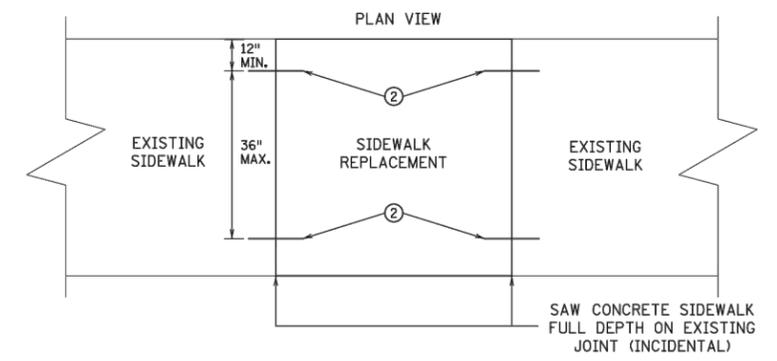
MILL & OVERLAY PROJECTS: "TABLING" OF FLOW LINES, IN FRONT OF THE PEDESTRIAN RAMP, IS REQUIRED WHEN THE EXISTING FLOW LINE IS GREATER THAN 2%. WARPING OF THE BITUMINOUS PAVEMENT CAN NOT EXTEND INTO THE THROUGH LANE. TABLE THE FLOW LINE TO 2% OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA:

- 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.

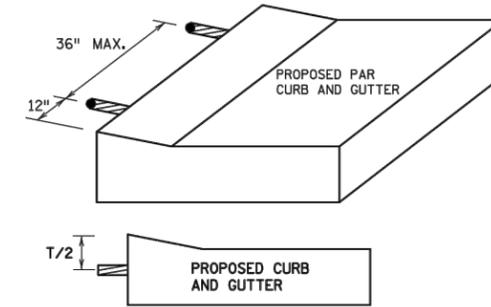
RAISING OF CURB LINES SHOULD OCCUR IN VERTICALLY CONSTRAINED AREAS. RAISE THE CURB LINES ENOUGH TO ALLOW COMPLIANT RAMPS OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA:

- 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

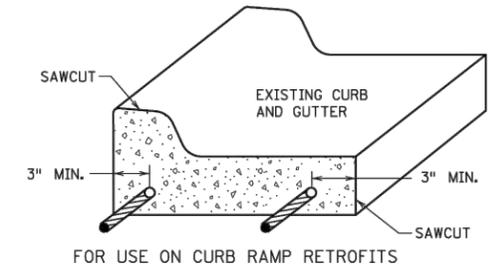


OPTIONAL SIDEWALK REINFORCEMENT

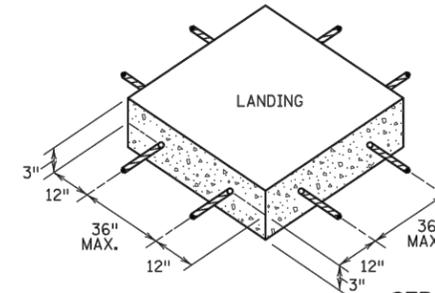
SIDEWALK REINFORCEMENT TO BE USED ONLY WHEN SPECIFIED IN THE PLAN.



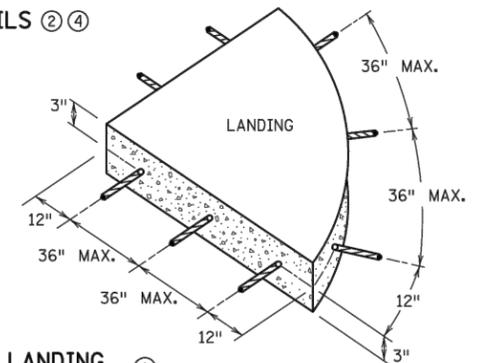
OPTIONAL CURB LINE REINFORCEMENT DETAILS



CURB AND GUTTER REINFORCEMENT



SEPARATE LANDING POUR REINFORCEMENT



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.

REVISIONS:
APPROVED: JANUARY 23, 2017
<i>[Signature]</i> OPERATIONS ENGINEER



STANDARD PLAN 5-297.250 6 OF 6

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

STATE PROJ. NO.

PEDESTRIAN CURB RAMP DETAILS

(T.H.) SHEET NO. OF SHEETS



7533 SUNWOOD DR NW, SUITE 206
 RAMSEY, MINNESOTA 55303
 Phone: (763) 433-2851
 Email: Ramsey@bolton-menk.com
 www.bolton-menk.com

DESIGNED	DRAWN	CHECKED	CLIENT PROJ. NO.
KFB	KGA	KFB	R16.120766

COLUMBUS, MINNESOTA

2020 ZURICH STREET EXTENSION

PEDESTRIAN CURB RAMP DETAILS

SHEET 13 OF 37

STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

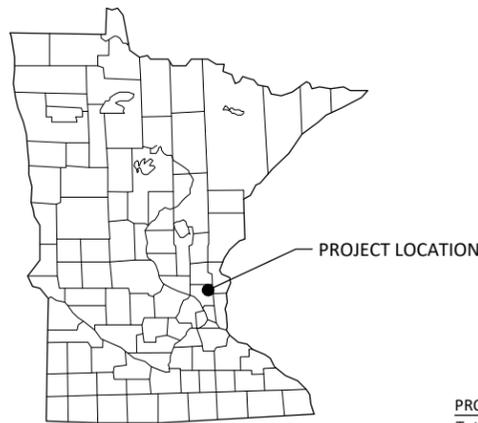
ZURICH STREET EXTENSION
CITY OF COLUMBUS
ANOKA COUNTY, MINNESOTA

SWPPP DESIGNER

UNIVERSITY OF MINNESOTA

Jason Cook

Design of Construction SWPPP (May 31 2020)



LEGEND

- 1-MILE BOUNDARY
- PROJECT LOCATION
- IMPAIRED, SPECIAL OR PROTECTED WATERS
- NATIONAL WETLANDS INVENTORY

PROJECT AREAS:

Total Project Size (disturbed area) =	2.17	ACRES
Existing area of impervious surface =	0.18	ACRES
Post construction area of impervious surface =	0.56	ACRES
Total new impervious surface area created =	0.38	ACRES

Planned Construction Start Date:	06/01/2020
Estimated Construction Completion Date:	06/01/2021

PERMANENT STORMWATER MANAGEMENT SYSTEM:

Type of storm water management used if more than 1 acre of new impervious surface is created:

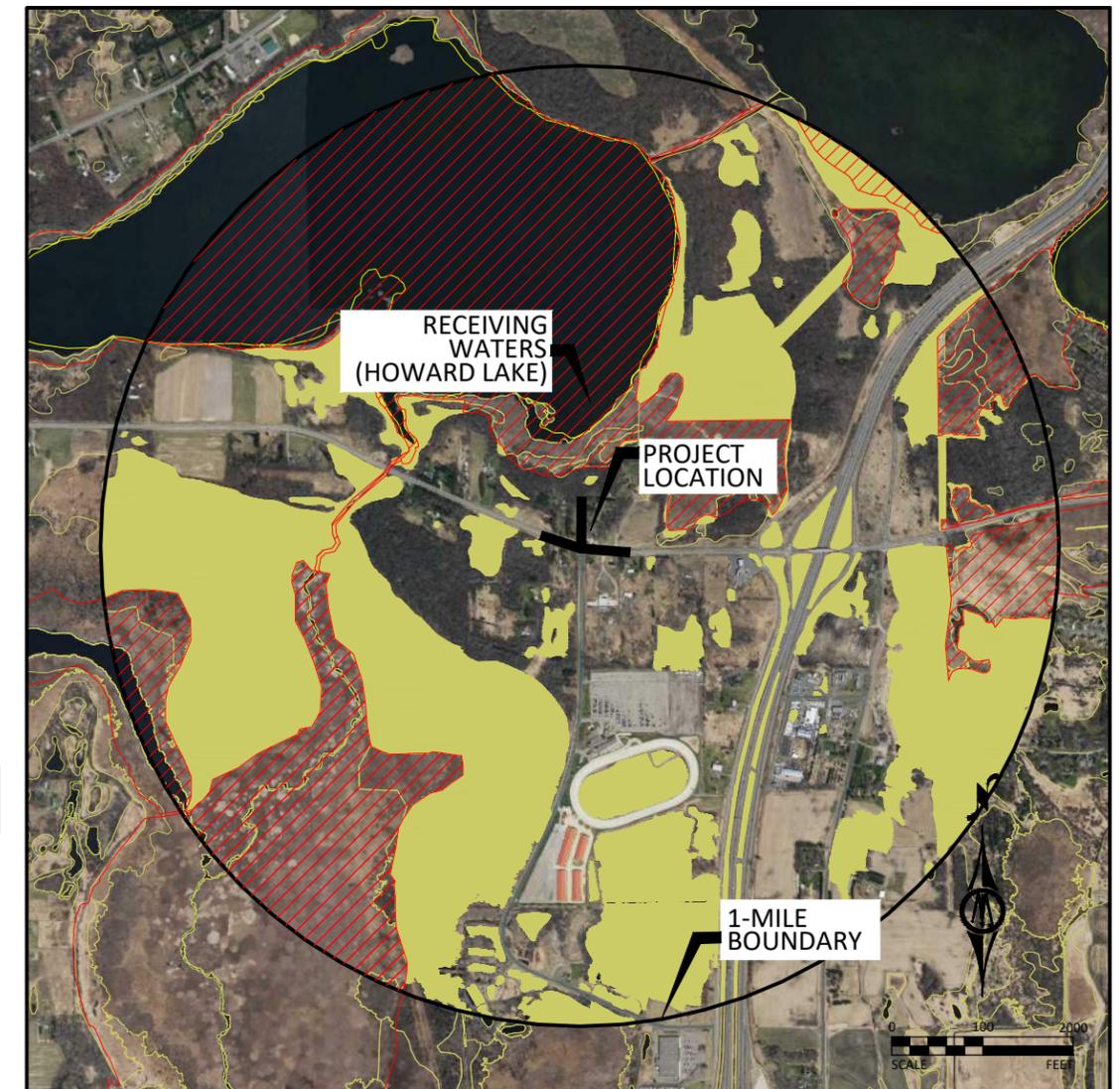
<input type="checkbox"/>	Wet Sedimentation Basin
<input type="checkbox"/>	Infiltration/Filtration
<input type="checkbox"/>	Regional Pond
<input type="checkbox"/>	Permanent Stormwater Management Not Required

Not Required - Less than 1 Acre of New Impervious Surface

PROJECT LOCATION:

COUNTY	TOWNSHIP	RANGE	SECTION	LATITUDE	LONGITUDE
Anoka	32	22	24	45.25068° N	93.03484° W

BMP SUMMARY	QUANTITY	UNIT
SILT FENCE, TYPE MS	1750	LF
STORM DRAIN INLET PROTECTION	4	EACH
DITCH CHECK/BIO-LOG	80	LF
BLANKET	4050	SY
HYDROMULCH	0.75	ACRE
RIP RAP	20	CY



RECEIVING WATERS:

Receiving waters, including surface water, wetlands, Public Waters, and stormwater ponds, within 1-mile of the project boundary are identified on the USGS 7.5 min quad map above. Receiving waters that are impaired, the impairment, and WLA are listed as follows. All specific BMPs relative to construction activities listed in the permit for special, prohibited, restricted, or impaired have been incorporated into this plan. All specific BMPs listed in approved TMDLs and those BMPs listed for construction related waste load allocations have also been incorporated.

NAME OF WATER BODY	TYPE (ditch, pond, wetland, lake, etc.)	Special, Prohibited, Restricted Water ¹	Flows to Impaired Water Within 1-Mile ²	USEPA Approved Construction Related TMDL ³
Howard Lake	Lake	No	No	No

¹ Special, prohibited, and restricted waters are listed in Section 23 of the MN Construction Stormwater General Permit (MNR100001).

² Identified as impaired under section 303 (d) of the federal Clean Water Act for phosphorus, turbidity, TSS, dissolved oxygen, and/or aquatic biota.

³ Construction Related TMDLs include those related to: phosphorus, turbidity, TSS, dissolved oxygen, and/or aquatic biota.

IMPLEMENTATION SCHEDULE AND PHASING: The Contractor is required to provide an updated schedule and site management plan meeting the minimum requirements of Section 1717 of the Minnesota Standard Specifications for Construction.

- Submit SWPPP Updates to Engineer. Submittal shall include any requested changes to the SWPPP, including but not limited to: Trained Personnel, Locations for Stockpiles, Concrete Washout, Sanitation Facilities, Types and Locations of Erosion & Sediment Control. Failure to submit updates shall be considered acceptance of the SWPPP as designed with no changes.
- Install perimeter sediment control, inlet protection, and construction exit.
- Remove bituminous pavement, storm sewer, and all buildings, sidewalks, retaining walls, fencing, driveways, septic systems, existing utilities, and trees from the existing property to be built on.
- Install infiltration basins and storm sewer.
- Install aggregate base.
- Install concrete curb & gutter.
- Construct bituminous roadway and concrete walk.
- Grade site and place topsoil.
- Stabilize site.
- Add additional temporary BMPs as necessary during construction based on inspection reports.
- Ensure final stabilization measures are complete.
- Provide digital copy of all Field SWPPP Documentation including Inspection Reports and SWPPP Revisions to the Owner.
- Submit Notice of Termination (NOT) to MPCA. NOTE: The NOT must be submitted to MPCA before Final Stabilization is considered complete.

RESPONSIBLE PARTIES:

The Contractor and Owner will be joint applicants under the MPCA's General Stormwater Permit for Construction Activity as required by the National Pollutant Discharge Elimination System (NPDES) Phase II program.

The Contractor shall provide one or more trained Construction SWPPP Manager(s) knowledgeable and experienced in the application of erosion prevention and sediment control BMPs that will oversee the implementation of the SWPPP, and the installation, inspection and maintenance of the erosion prevention and sediment control BMPs.

A Construction SWPPP Manager must be available for an on-site inspection within 72 hours upon request by the MPCA.

	COMPANY	CONTACT PERSON	PHONE
OWNER:	City of Columbus	Jim Windingstad - PW Superintendent	651-419-9015
SWPPP DESIGNER:	Bolton & Menk, Inc.	Jason Cook, P.E.	763-433-2851
CONTRACTOR:			
CONSTRUCTION SWPPP MANAGER:			
PARTY RESPONSIBLE FOR LONG TERM O&M:	City of Columbus	Jim Windingstad - PW Superintendent	651-419-9015

The SWPPP Designer, Construction SWPPP Manager, and BMP Installer must have appropriate training. Documentation showing training commensurate with the job duties and responsibilities is required to be included in the SWPPP prior to any work beginning on the site. Training documentation for the SWPPP Designer is included on the Narrative sheet. The Contractor shall attach training documentation to this SWPPP for the Construction SWPPP Manager and BMP Installer prior to the start of construction. This information shall be kept up to date until the project NOT is filed.

ADDITIONAL COMPENSATION

Payment for all work associated with Erosion and Sediment Control shall be as described in the Project Manual. Unless otherwise authorized by the Owner no additional payment shall be made for any work required to administer and maintain the site erosion and sediment control in compliance with the Minnesota Pollution Control Agency (MPCA) - General Stormwater Permit for Construction Activity (MN R100001) including but not limited to inspection, maintenance, and removal of BMPs or addition of BMPs to accommodate Contractor phasing.

DOCUMENT RETENTION

Permittees must make the SWPPP, including all inspection reports, maintenance records, training records and other information required by this permit, available to federal, state, and local officials within three (3) days upon request for the duration of the permit and for three (3) years following the NOT.

GENERAL STORMWATER DISCHARGE REQUIREMENTS

All requirements listed in Section 5.1 of the Permit for the design of the permanent stormwater management system and discharge have been included in the preparation of this SWPPP. These include but are not limited to:

- The expected amount, frequency, intensity, and duration of precipitation.
- The nature of stormwater runoff and run-on at the site
- Peak flow rates and stormwater volumes to minimize erosion at outlets and downstream channel and stream bank erosion.
- The range of soil particle sizes expected to be present on the site.

Permanent stormwater treatment systems for this project have been designed in accordance with the guidance in the MN Stormwater Manual in place at the time of bidding. Copies of the design information and calculations are part of this SWPPP and will be provided in digital format upon written request to the Engineer.

DESCRIPTION OF CONSTRUCTION ACTIVITIES AND STORMWATER MANAGEMENT:

Construction activities include: Concrete Curb & Gutter, Bituminous Paving, Signing & Striping, Signal System, Site Grading, Temporary Erosion and Sediment control, and permanent stabilization.

Stormwater currently surface drains south to the ditch on Lake Drive and into Howard Lake. A portion of the site surface drains north to Howard Lake.

After construction is complete stormwater will drain south to constructed infiltration basins. Stormwater that does not reach these basins will drain similarly to how it did pre-construction.

This project includes the following stormwater management BMPs: Ditch Checks, Bio-Logs, Stabilized Construction Exit, Silt Fence, Rip Rap, Infiltration Basins, and Storm Drain Inlet Protection.

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.

Kevin F. Bittner
LIC. NO. 21814 DATE 05/21/2020



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RAMSEY, MINNESOTA 55303
Phone: (763) 433-2851
Email: Ramsey@bolton-menk.com
www.bolton-menk.com

DESIGNED	NO.	ISSUED FOR	DATE
KFB			
DRAWN			
KGA			
CHECKED			
KFB			
CLIENT PROJ. NO.			
R16.120766			

COLUMBUS, MINNESOTA
2020 ZURICH STREET EXTENSION
SWPPP - PROJECT LOCATION

SHEET
14
OF
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Information contained in this SWPPP narrative sheet summarizes requirements of the GENERAL PERMIT AUTHORIZATION TO DISCHARGE STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITY UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM/STATE DISPOSAL SYSTEM PROGRAM - Permit No: MN RI00001 (Permit) as they apply to this project. All provisions of the Permit including those not specifically cited herein shall apply to this project. The Contractor is responsible to be familiar with and comply with all conditions of the permit. The full text of the Permit is available at: <https://www.pca.state.mn.us/sites/default/files/wq-strm2-80a.pdf>

SWPPP AMENDMENTS AND SUBMITTALS

Contractor must prepare and submit to the Engineer a SWPPP amendment as necessary to include additional Best Management Practices (BMPs) to correct problems identified or address the following situations.

1. Contact information and training documentation for Construction SWPPP Manager and BMP Installer,
2. There is a change in construction method of phasing, operation, maintenance, weather or seasonal conditions not anticipated during the design of the SWPPP including but not limited to:
 - a. Types and/or Locations of BMPs
 - b. Material Storage and Spill Response
 - c. Fueling Plans
 - d. Locations for Stockpiles, Concrete Washout, and Sanitation Facilities and
 - e. Project Phasing
3. It is determined that the SWPPP is not achieving objectives of minimizing pollutants in stormwater discharges associated with construction activity, or
4. The SWPPP is not consistent with the terms and conditions of the permit.

The Contractor may implement SWPPP amendments immediately and is not required to wait for Engineer review of the submittal. The responsibility for completeness of SWPPP amendments and compliance with the Permit lies with the Contractor. Review, comment, or lack of comment by the Engineer on a SWPPP amendment shall not absolve the responsibilities of the Contractor in any way.

If a change order is issued for a design change the SWPPP amendment will be prepared by the Engineer and included in the change order.

In addition to SWPPP amendments, the Contractor shall submit to the Engineer Weekly Erosion and Sediment Control Schedule meeting the requirements of MnDOT 1717.

The Contractor shall keep copies of all SWPPP amendments, Weekly Erosion and Sediment Control Schedules, inspection logs, and maintenance logs with the field copy of the SWPPP. A PDF copy of these documents will be provided along with a copy of the final Field Copy of the SWPPP to the Engineer along with the signed Notice of Termination when final stabilization is complete.

EROSION PREVENTION PRACTICES

Stormwater conveyance channels shall be routed around unstabilized areas. Erosion controls and velocity dissipation devices shall be used at outlets within and along the length of any constructed conveyance channel.

The normal wetted perimeter of all ditches or swales, including storm water management pond slopes, that drain waters from the site must be stabilized within 200' of any property edge or discharge point, including storm sewer inlets, within 24 hours of connection.

Temporary or permanent ditches or swales used as sediment containment during construction do not need to be stabilized during temporary period of use and shall be stabilized within 24 hours after no longer used as sediment containment.

Mulch, hydromulch, tackifier, or similar practice shall not be used in any portion of the wetted perimeter of a temporary or permanent drainage ditch or swale section with a continuous slope of greater than 2 percent.

Energy dissipation shall be installed at all temporary or permanent pipe outlets within 24 hours of connection to a surface water or permanent stormwater treatment system.

The Contractor shall phase construction and use construction methods to the extent practical to minimize exposed soils. The project phasing shall be documented in the Weekly Erosion and Sediment Control Schedule.

SEDIMENT CONTROL PRACTICES

Down gradient BMPs including perimeter BMPs must be in place before up gradient land- disturbing activities begin and shall remain in place until final stabilization.

All BMPs that have been adjusted or removed to accommodate short-term activities shall be re-installed or replaced the earlier of the end of the work day or before the next precipitation event even if the activity is not complete.

Inlet BMPs may be removed for specific safety concerns. The BMPs shall be replaced as soon as the safety concern is resolved. The removal shall be documented in the SWPPP as a SWPPP amendment.

Temporary stockpiles must have sediment control BMPs. The Contractor shall prepare and submit to the Engineer a SWPPP amendment showing the location of temporary stockpiles and the BMPs for each stockpile. The SWPPP amendment must meet the minimum requirements of Section 9 of the Permit.

Soil compaction shall be minimized and topsoil shall be preserved, unless infeasible or if construction activities dictate soil compaction or topsoil stripping.

The use of polymers, flocculants, or other sedimentation treatment chemicals are not proposed as part of this SWPPP as designed by the Engineer. If methods or phasing of construction require the use of any of these chemicals, the Contractor shall prepare and submit to the Engineer a SWPPP amendment that meets the minimum requirements of Section 9 of the Permit.

TEMPORARY SEDIMENTATION BASINS

A temporary sedimentation basin has not been included in this SWPPP as designed by the Engineer. If a basin is later determined to be desirable or necessary the Contractor shall prepare and submit to the Engineer a SWPPP amendment. Temporary sedimentation basins shall meet or exceed the minimum requirements of Section 14 of the Permit and shall include a basin draining plan meeting or exceeding the minimum requirements of Section 10 of the Permit. Where the site discharges to Special and/or Impaired Waters the SWPPP amendment shall also meet or exceed the minimum requirements of Section 23 of the permit.

DEWATERING

A dewatering plan has not been included in this SWPPP as designed by the Engineer. If dewatering is required for this project, the Contractor shall prepare and submit to the Engineer a SWPPP amendment. All dewatering shall meet or exceed the minimum requirements of Section 10 of the Permit.

POLLUTION PREVENTION

Products and materials that have the potential to leach pollutants that are stored on the site must be stored in a manner designed to minimize contact with stormwater. Materials that are not a source of potential contamination to stormwater or that are designed for exposure to stormwater are not required to be covered.

Hazardous materials including but not limited to pesticides, fertilizer, petroleum products, curing compounds and toxic waste must be properly stored and protected from stormwater exposure as recommended by the manufacturer in an access restricted area.

Solid waste must be stored, collected and disposed of in compliance with Minnesota Administrative Rules Chapter 7035.

Portable toilets must be positioned so that they are secure and will not be tipped or knocked over. Sanitary waste must be disposed of properly in accordance with Minn. R. CH 7041.

Exterior vehicle or equipment washing on the project site shall be limited to a defined area of the site. No engine degreasing is allowed on site. A sign must be installed adjacent to each washout facility that requires site personnel to utilize the proper facilities for disposal of concrete and other washout wastes.

The Contractor shall prepare and submit a SWPPP amendment detailing the location and BMPs proposed for storage of materials, solid waste, portable toilets, and exterior vehicle or equipment washing on the site. The SWPPP amendment shall include a spill prevention and response plan that is appropriate for the materials proposed to be on the site. The SWPPP amendment shall meet or exceed the minimum requirements of Section 12 of the Permit.

INSPECTION & MAINTENANCE

A trained person shall routinely inspect the entire construction site at the time interval indicated on this sheet of the SWPPP during active construction and within 24-hours after a rainfall event greater than 0.5 inches in 24 hours. Following an inspection that occurs within 24-hours after a rainfall event, the next inspection must be conducted at the time interval indicated in the Receiving Waters Table found on the SITE PLAN AND INFORMATION SHEET of the SWPPP.

All inspections and maintenance conducted during construction must be recorded on the day it is completed and must be retained with the SWPPP. Inspection report forms are available in the Project Specifications. Inspection report forms other than those provided shall be approved by the engineer.

The Contractor may request a change in inspection schedule for the following conditions:

- a. Inspections of areas with permanent cover to be reduced to once per month,
- b. Inspections of areas that have permanent cover and have had no construction activity for 12 months to be suspended until construction resumes,
- c. Inspections of areas where construction is suspended due to frozen ground conditions, inspections to be suspended until the earlier of within 24 hours of runoff occurring, or upon resuming construction.

No change in inspection schedule shall occur until authorized by the Engineer.

Inspections must include:

1. All erosion prevention and sediment control BMPs and Pollution Prevention Management Measures to ensure integrity and effectiveness.
2. Surface waters, including drainage ditches and conveyance systems for evidence of erosion and sediment deposition.
3. Construction site vehicle exit locations, streets and curb and gutter systems within and adjacent to the project for sedimentation from erosion or tracked sediment from vehicles.
4. Infiltration areas to ensure that no sediment from ongoing construction activity is reaching the infiltration area and that equipment is not being driven across the infiltration area.

All non-functioning BMPs and those BMPs where sediment reaches one-half (1/2) of the depth of the BMP, or in the case of sediment basins one-half (1/2) of the storage volume, must be repaired, replaced, or supplemented by the end of the next business day after discovery, or as soon as field conditions allow.

Permittees must repair, replace or supplement all nonfunctional BMPs with functional BMPs by the end of the next business day after discovery, or as soon as field conditions allow.

Any sediment that escapes the site must be removed and the area stabilized within 7 calendar days of discovery unless precluded by legal, regulatory, or physical access in which case the work shall be completed within 7 calendar days of authorization. Paved surfaces such as streets shall have any escaped or tracked sediment removed by the end of the day that it is discovered. Sediment release, other than paved surfaces that can be cleaned up with street sweeping shall be reported immediately upon discovery to the Engineer.

PUBLIC WATER RESTRICTIONS:

For public waters that have been promulgated "work in water restrictions" during fish spawning time frames, all exposed soil areas that are within 200 feet of the water's edge, and drain to these waters must complete stabilization within 24-hours during the time period. MN DNR permits are not valid for work in waters that are designated as infested waters unless accompanied by an Infested Waters Permit or written notification has been obtained from MN DNR stating that such permit is not required. There is no exception for pre-existing permits. If a MN DNR Permit has been issued for the project and the water is later designated as infested, the Contractor shall halt all work covered by the MN DNR Permit until an Infested Waters Permit is obtained or that written notification is obtained stating that such permit is not required.

FINAL STABILIZATION

Final Stabilization is not complete until all the following requirements have been met:

1. Substantial Completion has been reached and no ground disturbing activities are anticipated.
2. Permanent cover has been installed with an established minimum uniform perennial vegetation density of 70 percent of its expected final growth. Vegetation is not required in areas where no vegetation is proposed by this project such as impervious surfaces or the base of a sand filter.

3. Accumulated sediment has been removed from all permanent stormwater treatment systems as necessary to ensure the system is operating as designed.
4. All sediment has been removed from conveyance systems
5. All temporary synthetic erosion prevention and sediment control BMPs have been removed. BMPs designated on the SWPPP to remain to decompose on-site may remain.
6. For residential construction only, permit coverage terminates on individual lots if the structures are finished and temporary erosion prevention and downgradient perimeter control is complete, the residence sells to the homeowner, and the permittee distributes the MPCA's "Homeowner Fact Sheet" to the homeowner.
7. For agricultural land only (e.g., pipelines across cropland), the disturbed land must be returned to its preconstruction agricultural use prior to submitting the NOT.

SITE STABILIZATION COMPLETION:

Stabilization of exposed soils shall begin immediately and shall be completed after the construction activity has temporarily or permanently ceased no later than:	14 calendar days
--	------------------

SITE INSPECTION INTERVAL:

A trained person shall routinely inspect the entire construction site during active construction at an interval of no less than:	7 calendar days
--	-----------------

SPECIAL ENVIRONMENTAL CONSIDERATIONS AND PERMITS:

1) Was an environmental review required for this project or any part of a common plan of development or sale that includes all or any portion of this project?	NO
2) Does any portion of the site have the potential to affect threatened or endangered species or their critical habitat?	NO
3) Does any portion of this site discharge to a Calcareous fen.	NO
4) Will any portion of the site potentially affect properties listed on the National Register of Historic Places or a known or discovered archeological site?	NO
5) Have any Karst features been identified in the project vicinity?	NO
6) Is compliance with temporary or permanent stormwater management design requirements infeasible for this project?	NO
7) Has the MN DNR promulgated "work in water restrictions" for any Public Water this site discharges to during fish spawning?	NO

TYPE OF PERMIT	PERMITTING AGENCY	PERMIT STATUS AND CONDITIONS
Construction Stormwater NPDES	MPCA	PENDING

SWPPP DESIGNER

UNIVERSITY OF MINNESOTA

Jason Cook

Design of Construction SWPPP (May 31 2020)

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.

Kevin F. Bittner
LIC. NO. 21814 DATE 05/21/2020



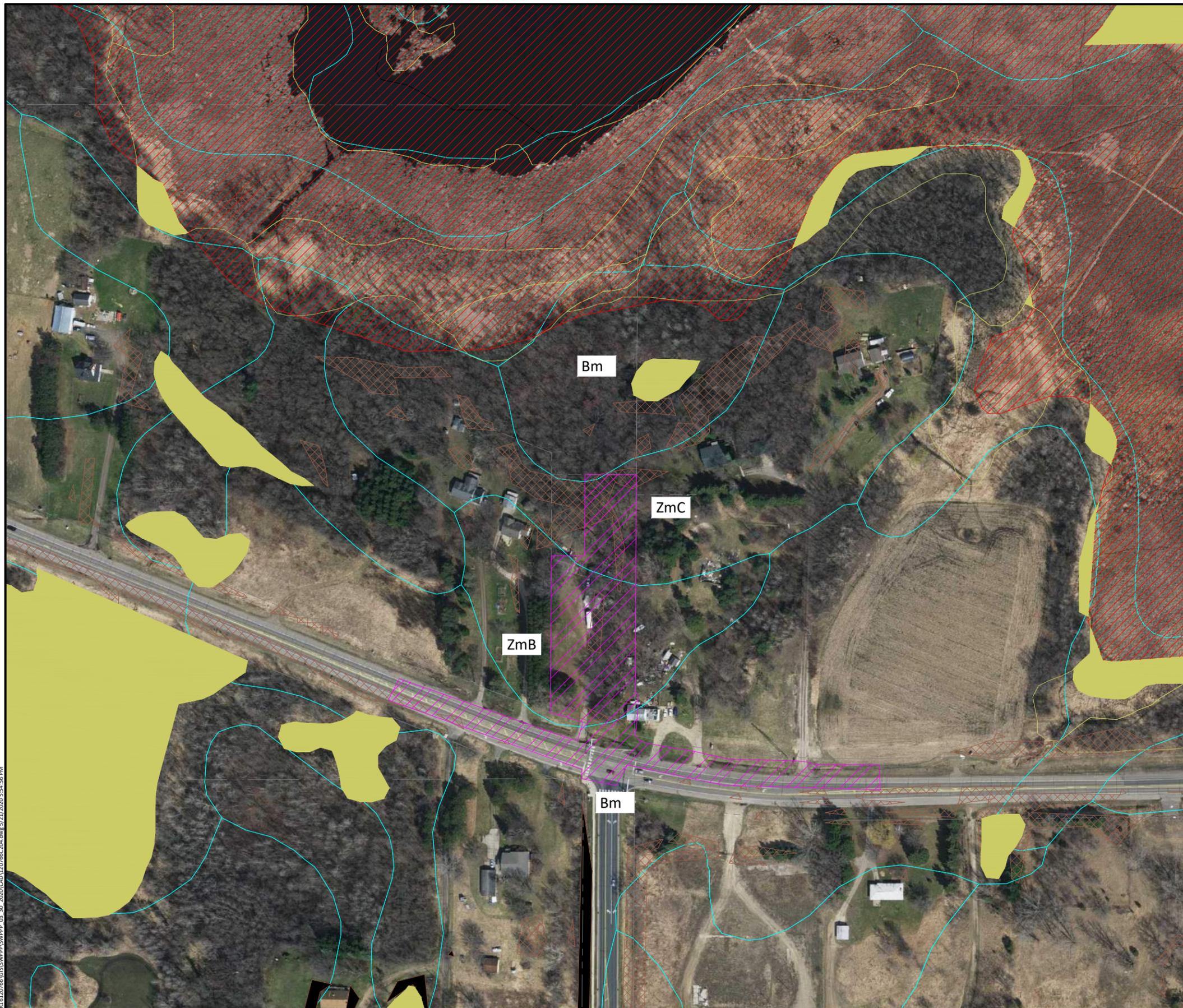
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COLUMBUS, MINNESOTA
2020 ZURICH STREET EXTENSION

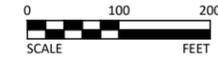
SWPPP NARRATIVE

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LEGEND

-  PROJECT BOUNDARY
-  SOIL TYPE
-  IMPAIRED, SPECIAL OR PROTECTED WATERS
-  NATIONAL WETLANDS INVENTORY
-  STEEP SLOPES (>33.3%)



SOIL TYPE SUMMARY

Map Unit Symbol	Soil Name	Hyd. Soil Group	Erodibility
MUSYM	MUNAME	HYDGRP	MUHELCL
Bm	Blomford Loamy Fine Sand	B/D	NHEL
ZmB	Zimmerman Fine Sand, 2 to 6 Percent Slopes	A	NHEL
ZmC	Zimmerman Fine Sand, 6 to 12 Percent Slopes	A	NHEL

NHEL - Not Highly Erodible Land
 PHEL - Potentially Highly Erodible Land
 HEL - Highly Erodible Land

LOCATION OF SWPPP REQUIREMENTS IN PROJECT PLAN

DESCRIPTION	SHEET NO.
SITE MAP	14
DIRECTION OF FLOW	17
FINAL STABILIZATION	17
SOILS	16
DRAINAGE STRUCTURES	18
EROSION & SEDIMENT CONTROL DETAILS	6
TURF RESTORATION & EROSION CONTROL	17
NARRATIVE & NOTES	15

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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.

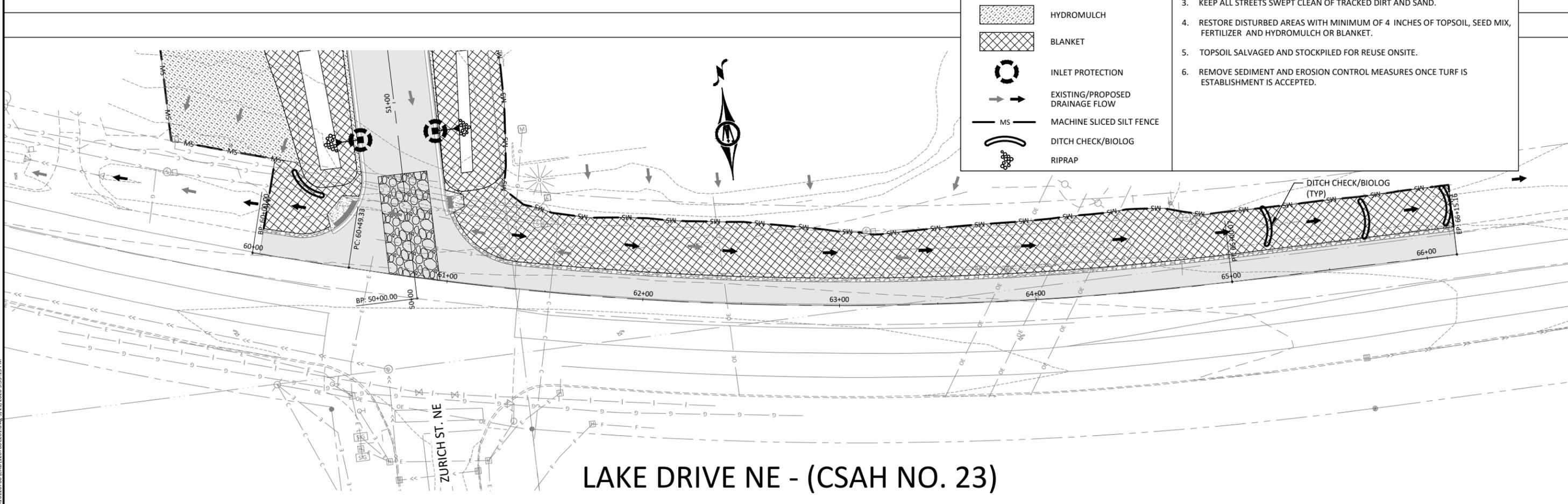
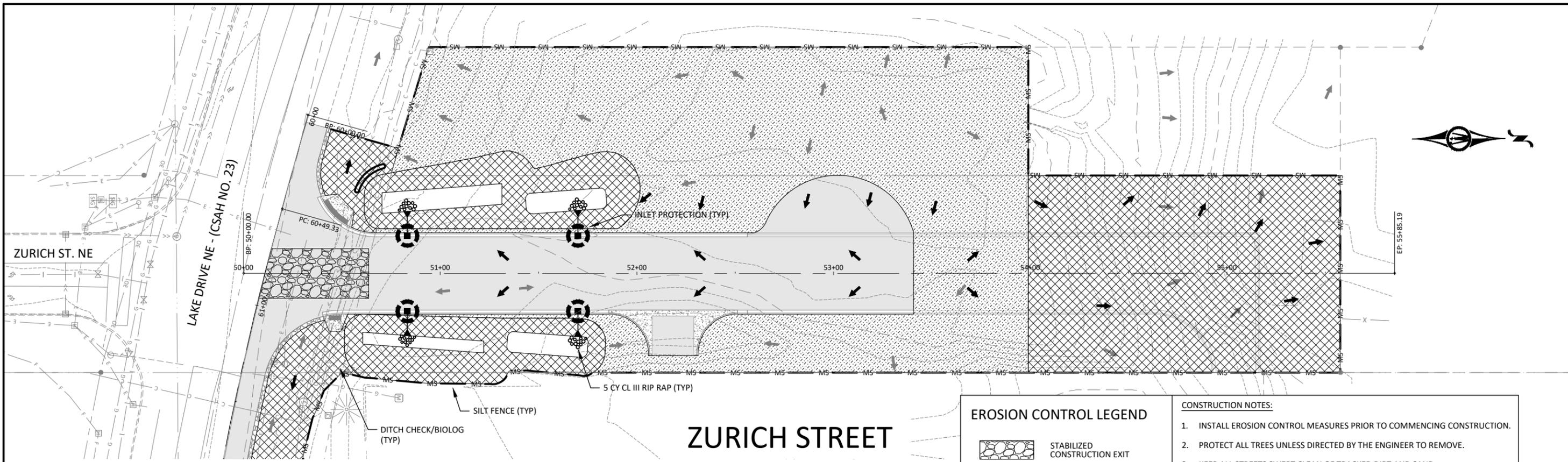
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COLUMBUS, MINNESOTA
 2020 ZURICH STREET EXTENSION
 SWPPP SOILS



EROSION CONTROL LEGEND

-  STABILIZED CONSTRUCTION EXIT
-  HYDROMULCH
-  BLANKET
-  INLET PROTECTION
-  EXISTING/PROPOSED DRAINAGE FLOW
-  MS MACHINE SLICED SILT FENCE
-  DITCH CHECK/BIOLOG
- RIPRAP

CONSTRUCTION NOTES:

1. INSTALL EROSION CONTROL MEASURES PRIOR TO COMMENCING CONSTRUCTION.
2. PROTECT ALL TREES UNLESS DIRECTED BY THE ENGINEER TO REMOVE.
3. KEEP ALL STREETS SWEEPED CLEAN OF TRACKED DIRT AND SAND.
4. RESTORE DISTURBED AREAS WITH MINIMUM OF 4 INCHES OF TOPSOIL, SEED MIX, FERTILIZER AND HYDROMULCH OR BLANKET.
5. TOPSOIL SALVAGED AND STOCKPILED FOR REUSE ONSITE.
6. REMOVE SEDIMENT AND EROSION CONTROL MEASURES ONCE TURF IS ESTABLISHMENT IS ACCEPTED.



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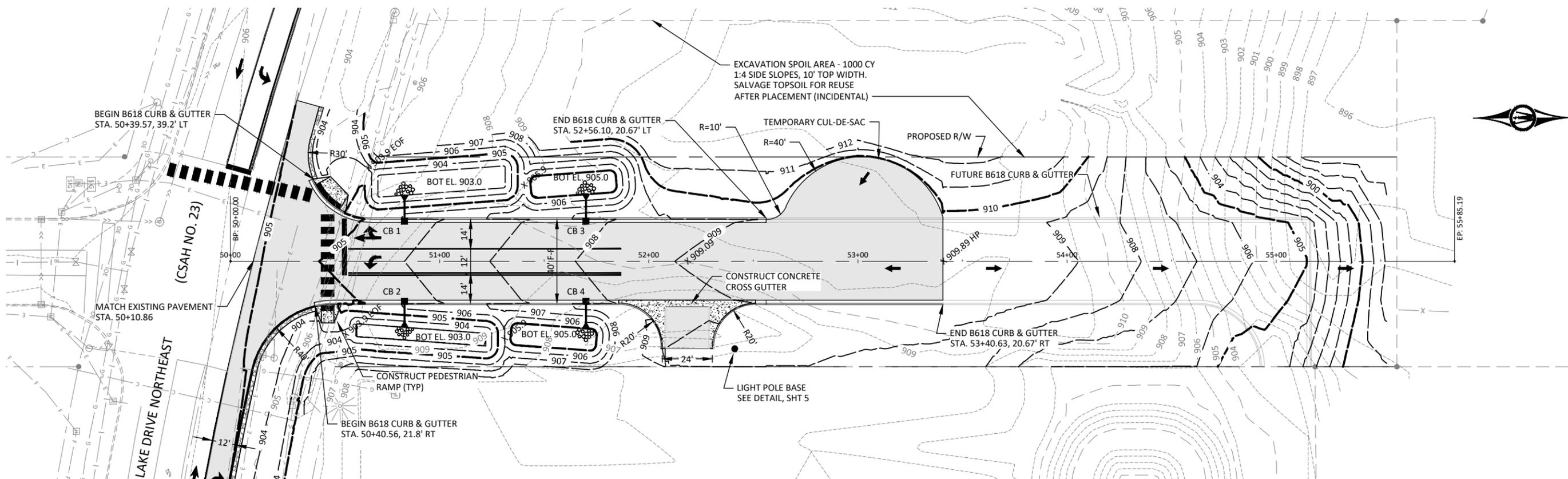


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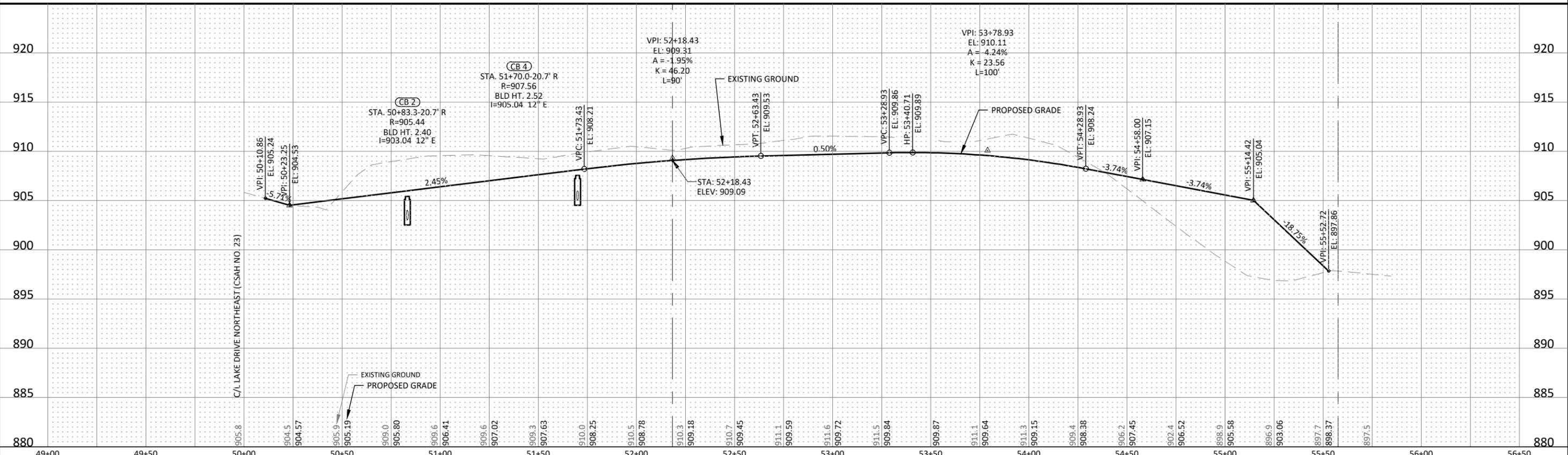
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COLUMBUS, MINNESOTA
2020 ZURICH STREET EXTENSION
TURF ESTABLISHMENT & EROSION CONTROL

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ZURICH STREET



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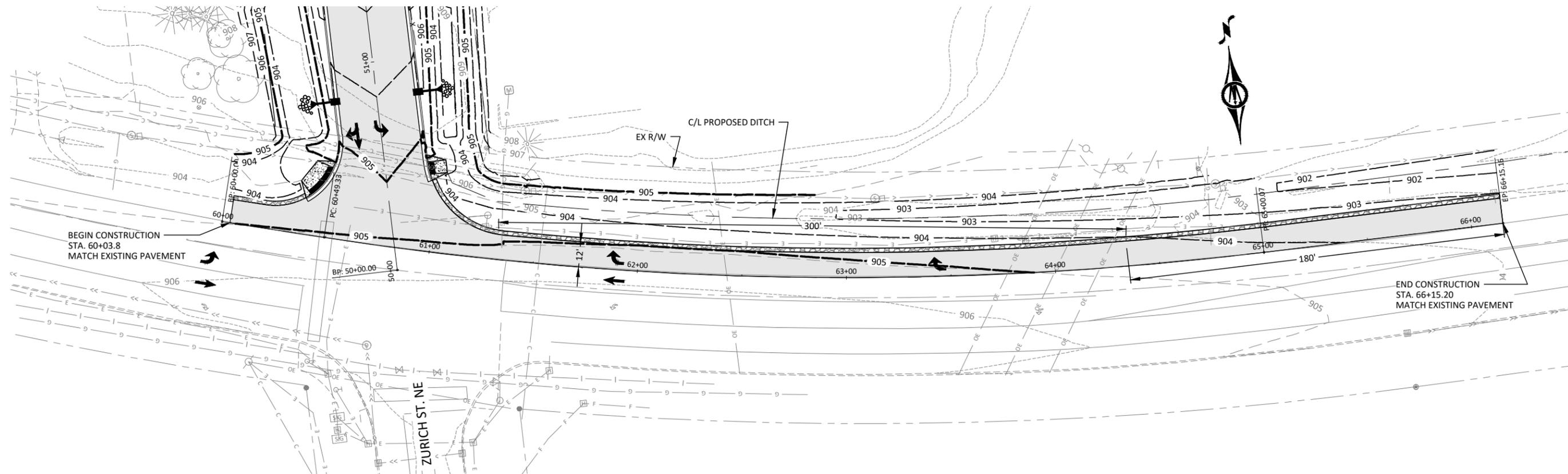


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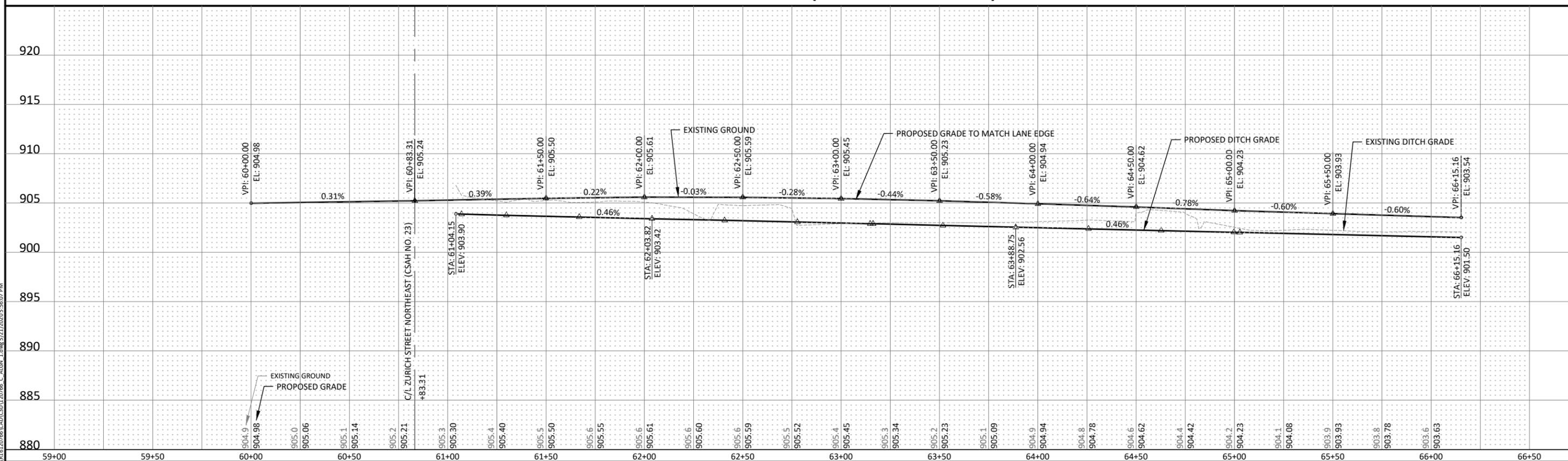
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COLUMBUS, MINNESOTA
2020 ZURICH STREET EXTENSION
ZURICH STREET NE - PLAN & PROFILE

SHEET
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OF
37



LAKE DRIVE NE - (CSAH NO. 23)



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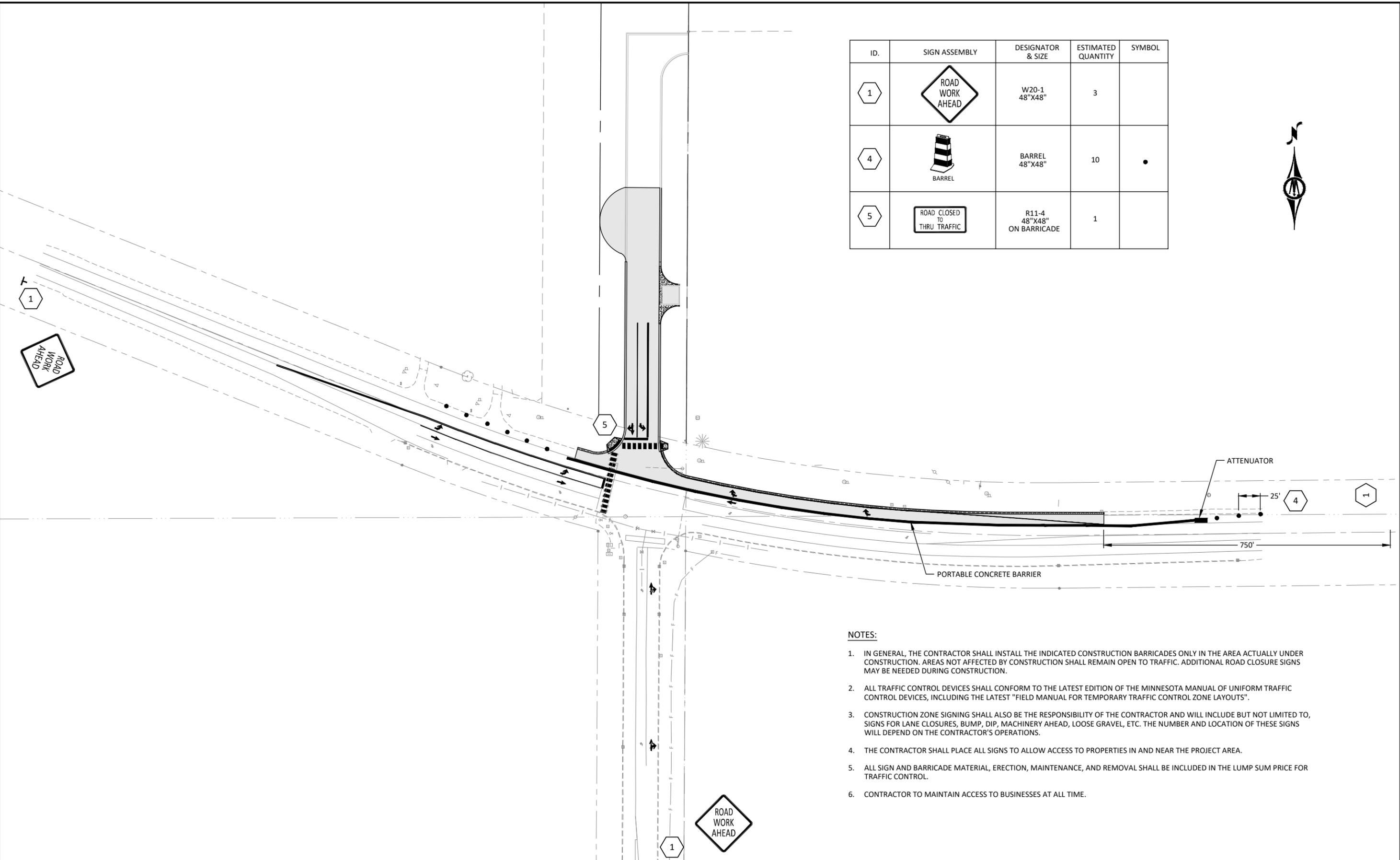
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COLUMBUS, MINNESOTA
2020 ZURICH STREET EXTENSION
LAKE DRIVE NE - CSAH NO. 23 - PLAN & PROFILE

SHEET
19
OF
37

ID.	SIGN ASSEMBLY	DESIGNATOR & SIZE	ESTIMATED QUANTITY	SYMBOL
1		W20-1 48"X48"	3	
4		BARREL 48"X48"	10	•
5		R11-4 48"X48" ON BARRICADE	1	



NOTES:

1. IN GENERAL, THE CONTRACTOR SHALL INSTALL THE INDICATED CONSTRUCTION BARRICADES ONLY IN THE AREA ACTUALLY UNDER CONSTRUCTION. AREAS NOT AFFECTED BY CONSTRUCTION SHALL REMAIN OPEN TO TRAFFIC. ADDITIONAL ROAD CLOSURE SIGNS MAY BE NEEDED DURING CONSTRUCTION.
2. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST EDITION OF THE MINNESOTA MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE LATEST "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS".
3. CONSTRUCTION ZONE SIGNING SHALL ALSO BE THE RESPONSIBILITY OF THE CONTRACTOR AND WILL INCLUDE BUT NOT LIMITED TO, SIGNS FOR LANE CLOSURES, BUMP, DIP, MACHINERY AHEAD, LOOSE GRAVEL, ETC. THE NUMBER AND LOCATION OF THESE SIGNS WILL DEPEND ON THE CONTRACTOR'S OPERATIONS.
4. THE CONTRACTOR SHALL PLACE ALL SIGNS TO ALLOW ACCESS TO PROPERTIES IN AND NEAR THE PROJECT AREA.
5. ALL SIGN AND BARRICADE MATERIAL, ERECTION, MAINTENANCE, AND REMOVAL SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR TRAFFIC CONTROL.
6. CONTRACTOR TO MAINTAIN ACCESS TO BUSINESSES AT ALL TIME.

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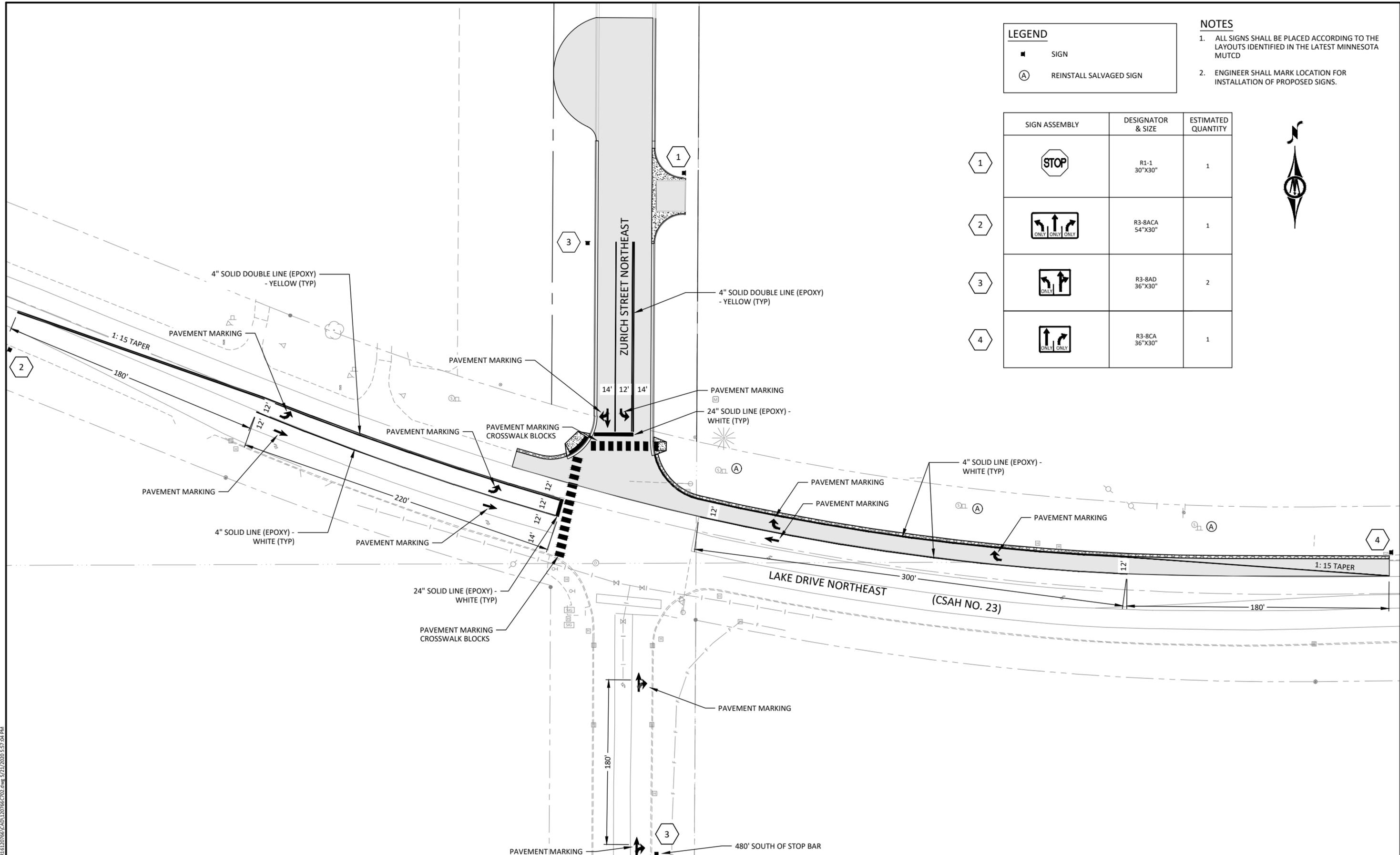
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2020 ZURICH STREET EXTENSION
TRAFFIC CONTROL PLAN

SHEET 20 OF 37

LEGEND	
■	SIGN
Ⓐ	REINSTALL SALVAGED SIGN

- NOTES**
- ALL SIGNS SHALL BE PLACED ACCORDING TO THE LAYOUTS IDENTIFIED IN THE LATEST MINNESOTA MUTCD
 - ENGINEER SHALL MARK LOCATION FOR INSTALLATION OF PROPOSED SIGNS.

SIGN ASSEMBLY	DESIGNATOR & SIZE	ESTIMATED QUANTITY
1	R1-1 30"X30"	1
2	R3-8ACA 54"X30"	1
3	R3-8AD 36"X30"	2
4	R3-8CA 36"X30"	1



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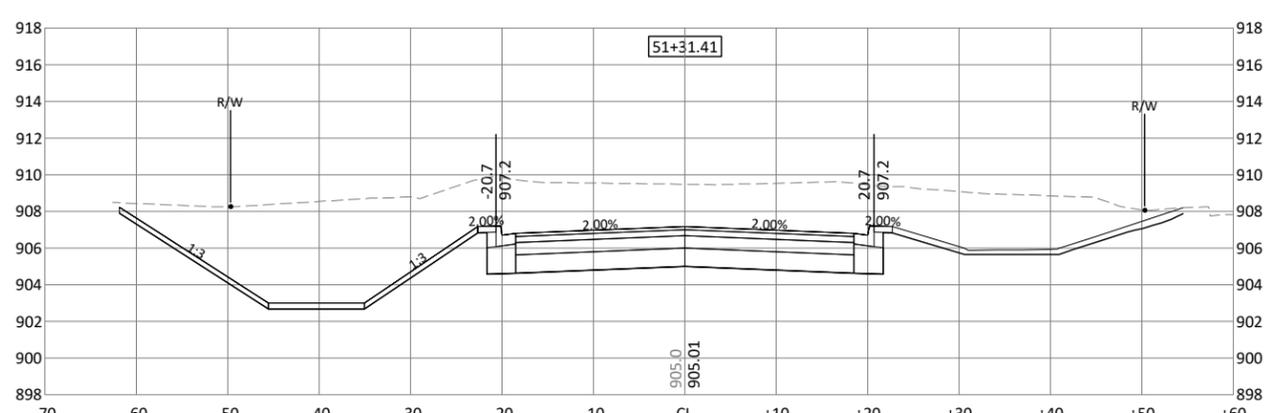
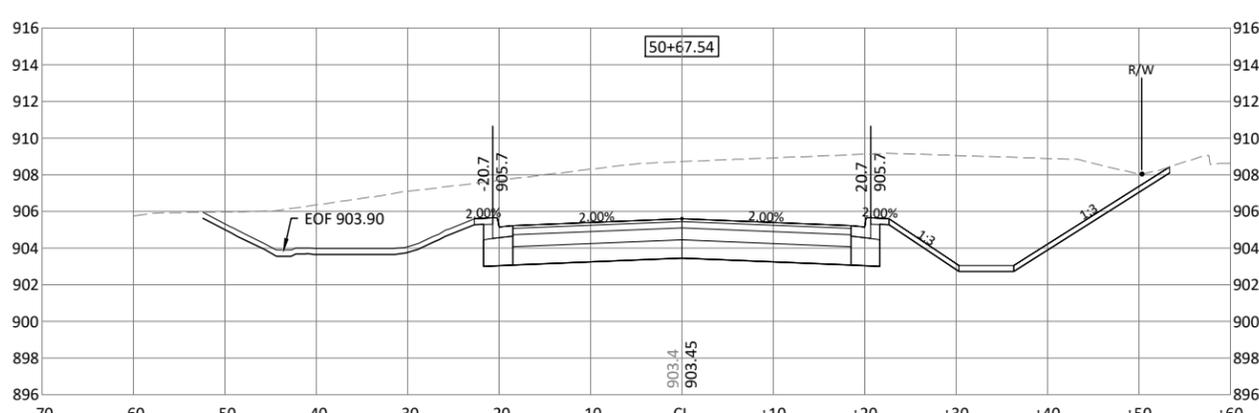
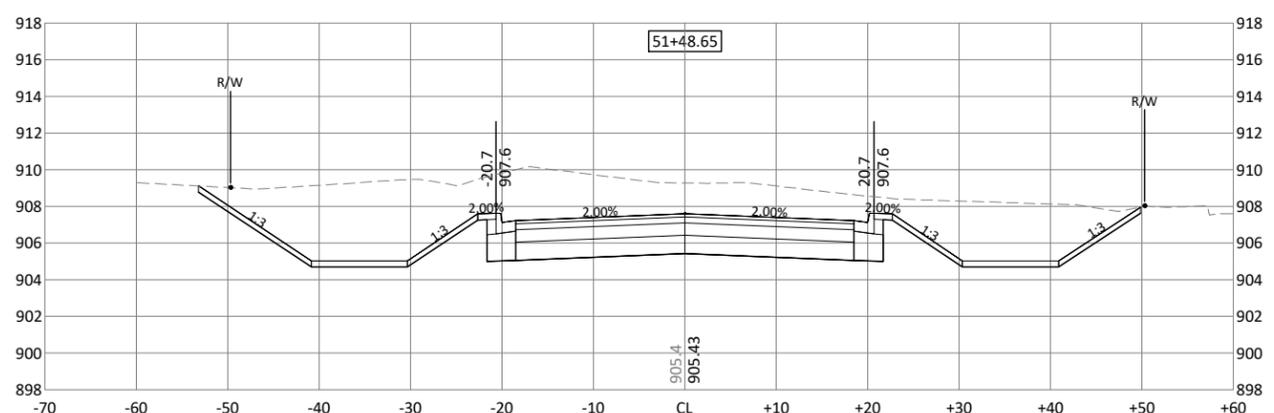
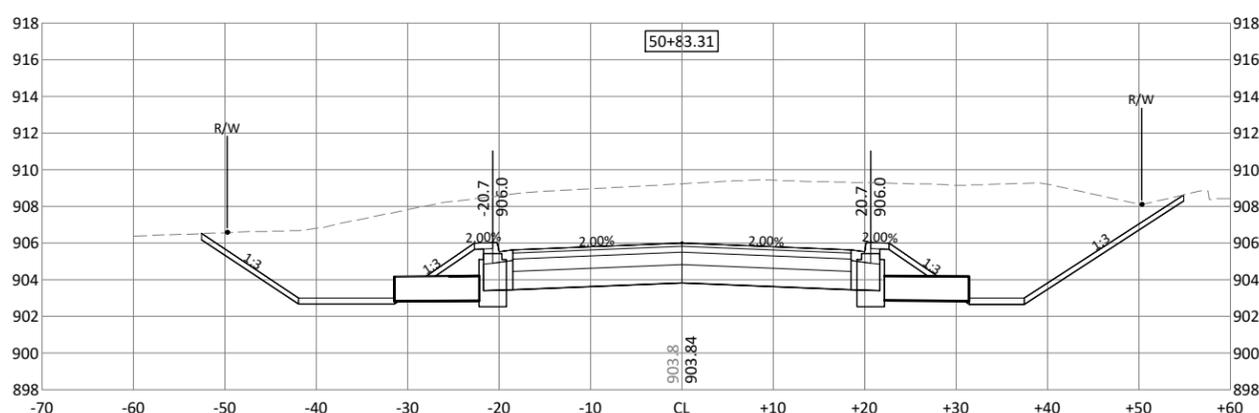
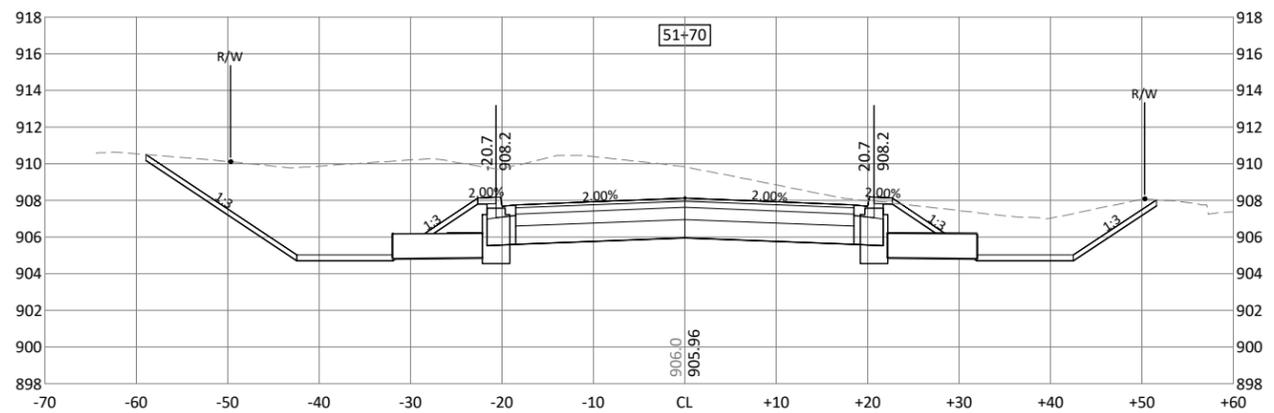
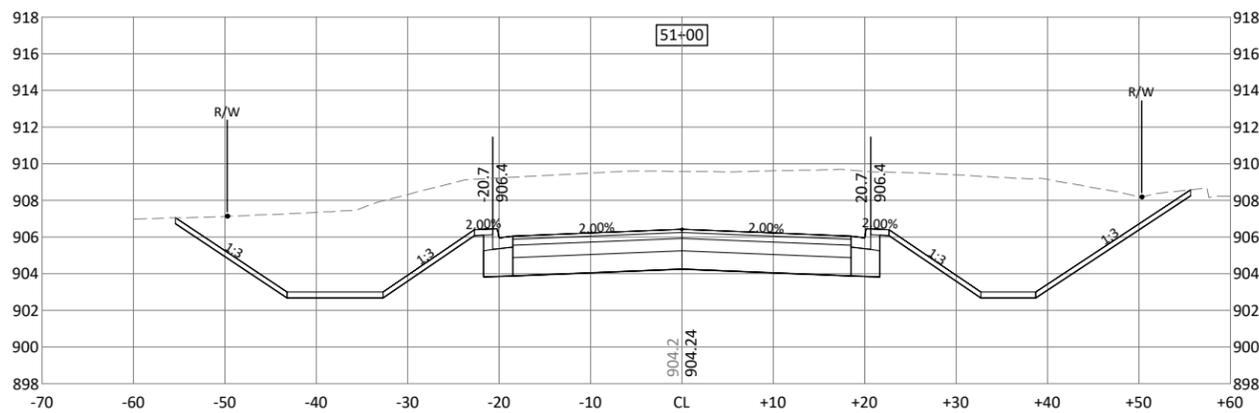
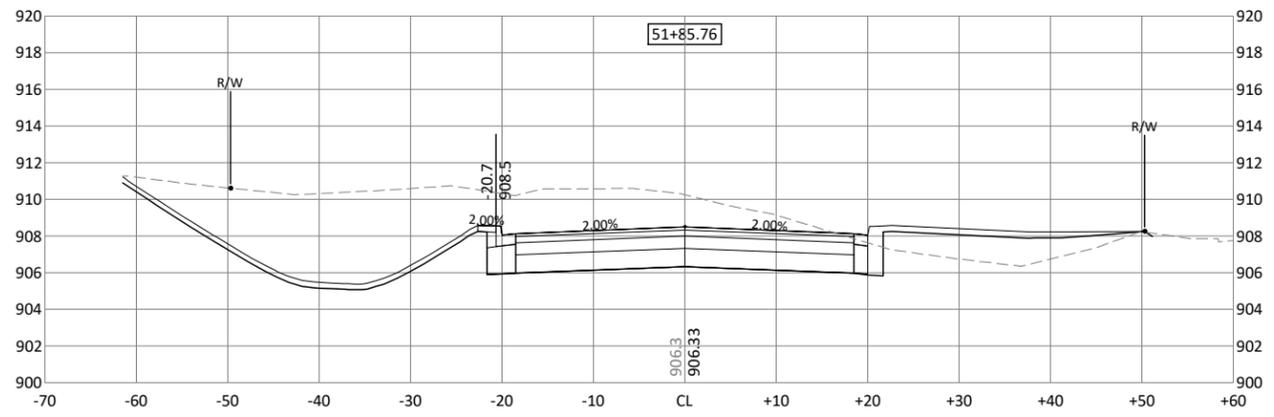
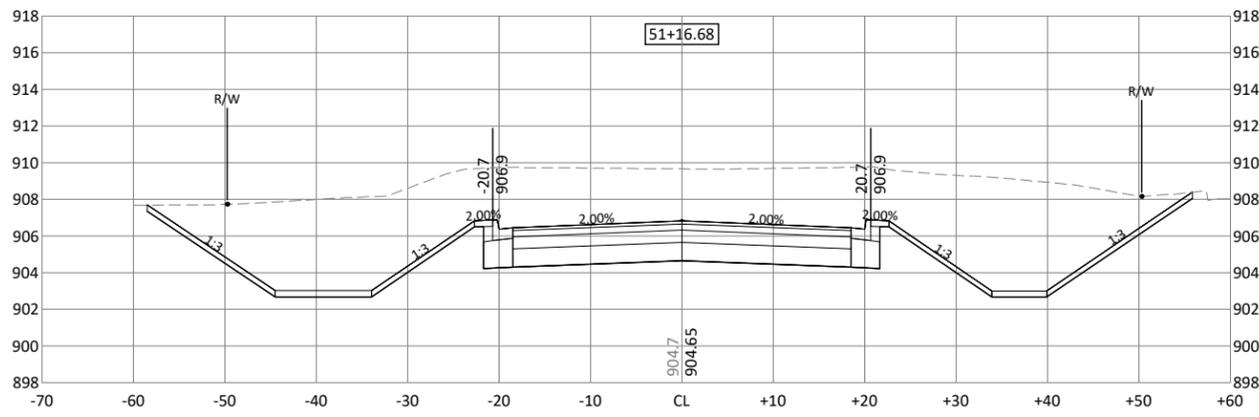


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COLUMBUS, MINNESOTA
2020 ZURICH STREET EXTENSION
SIGNING AND STRIPING PLAN

SHEET 21
OF 37



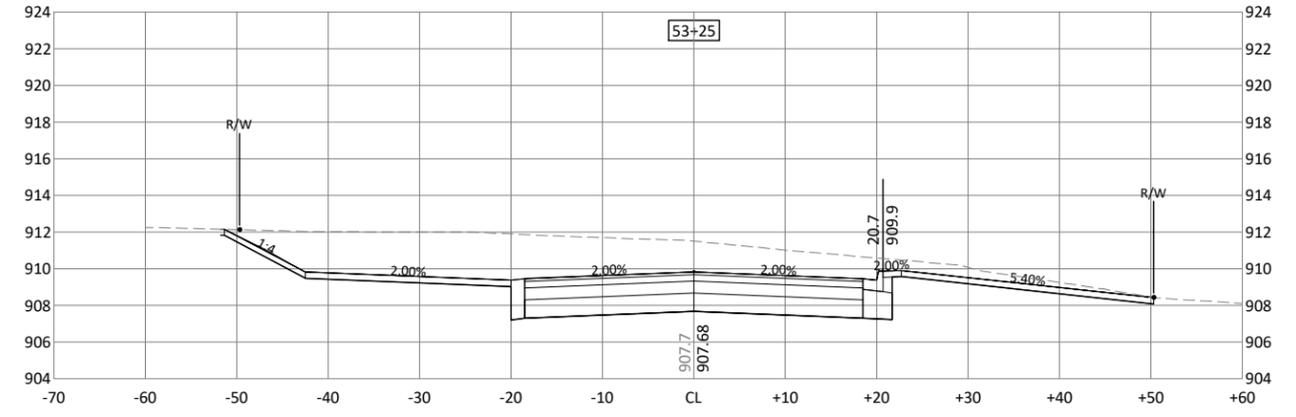
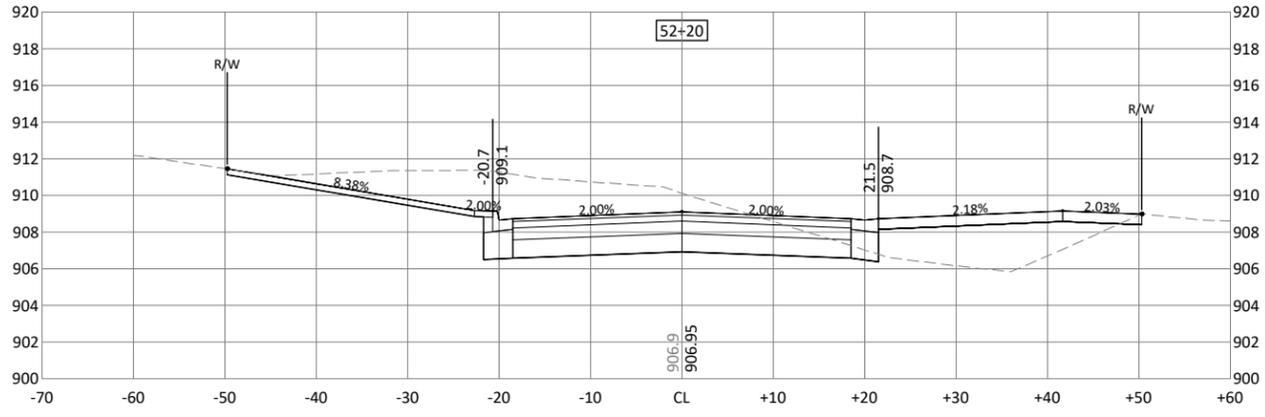
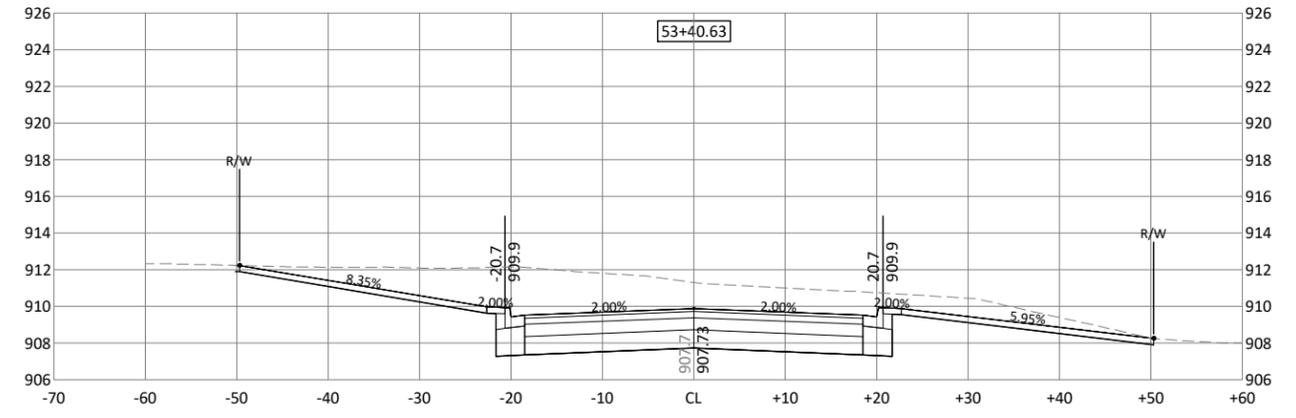
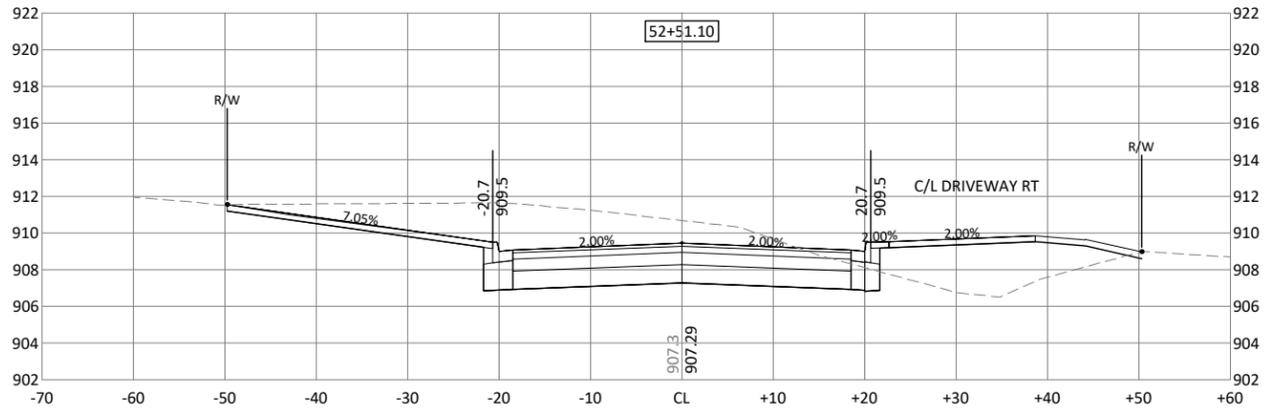
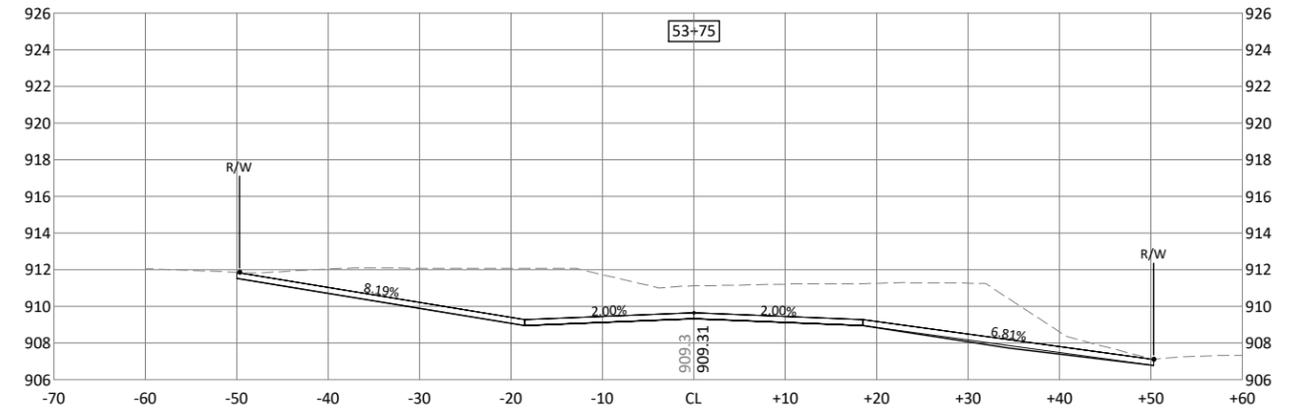
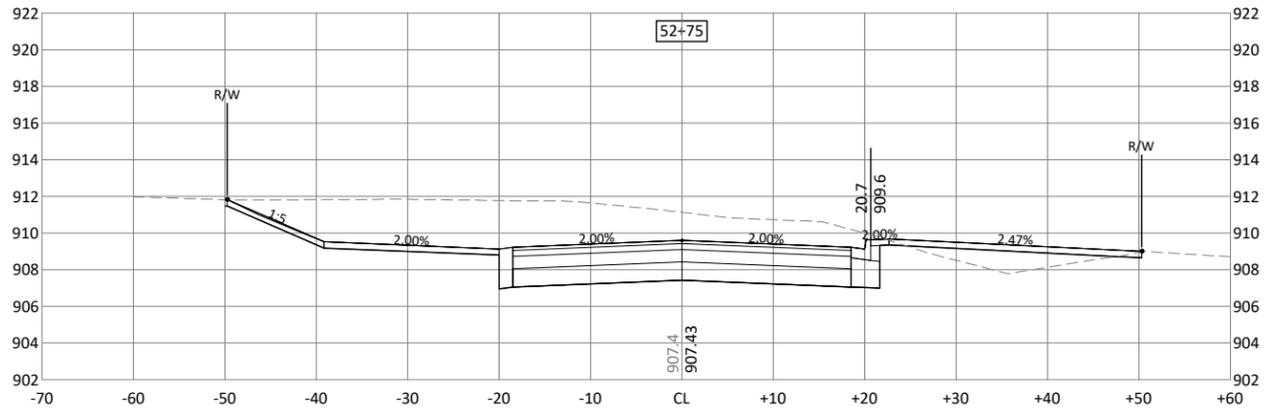
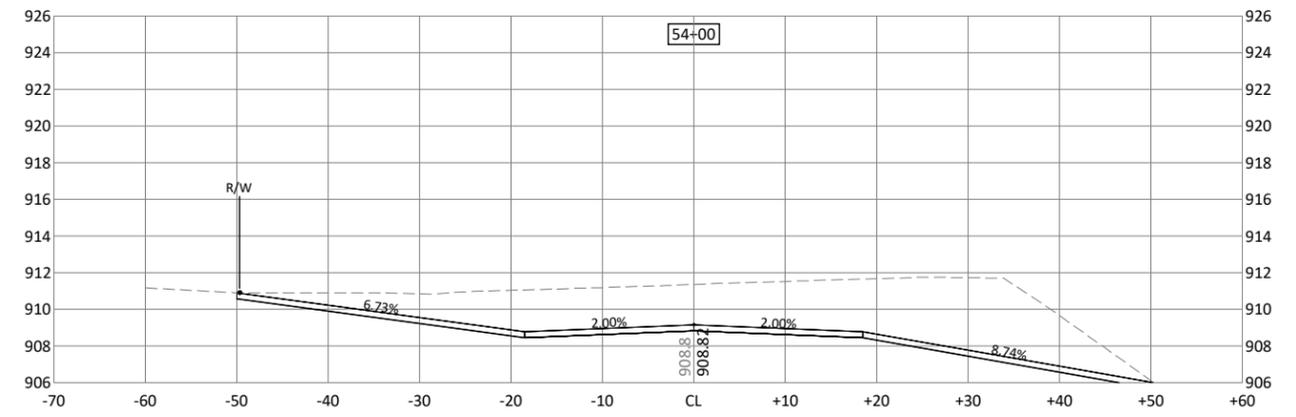
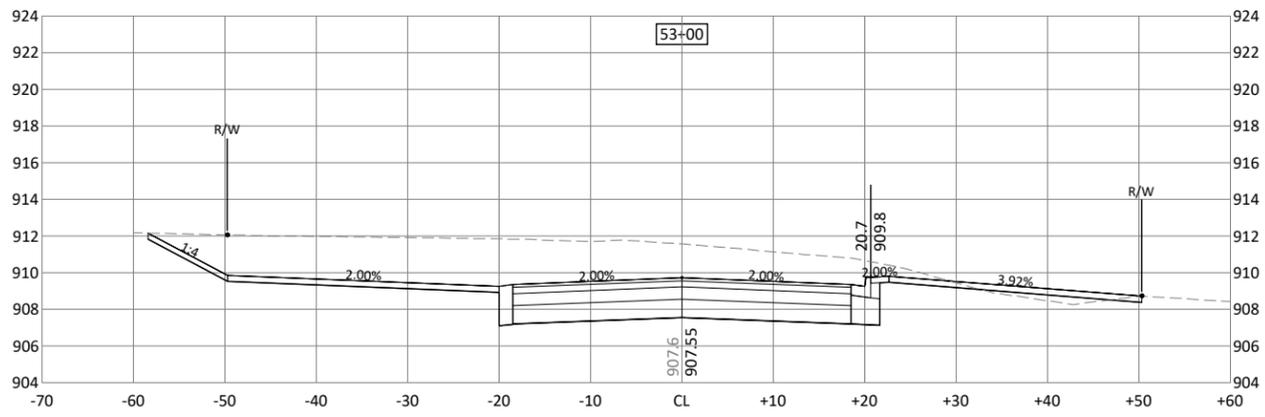
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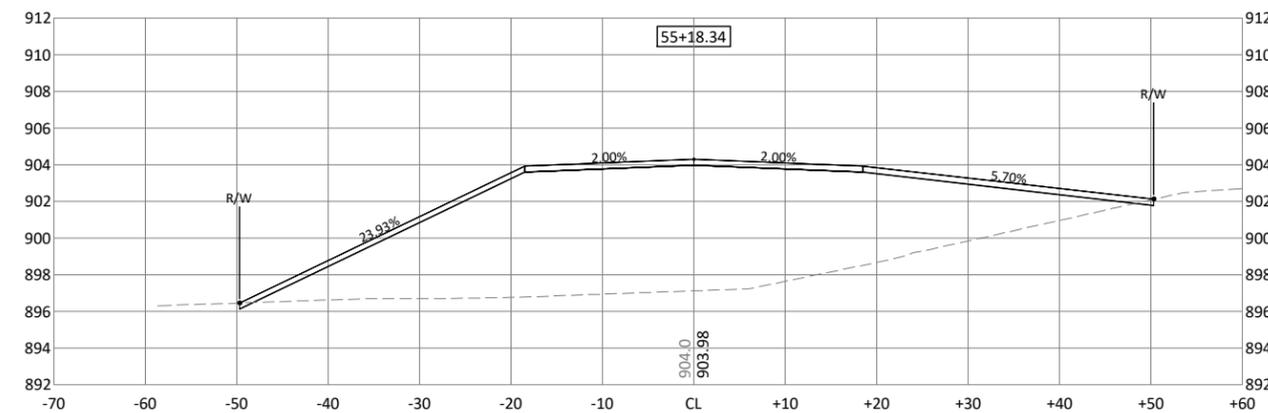
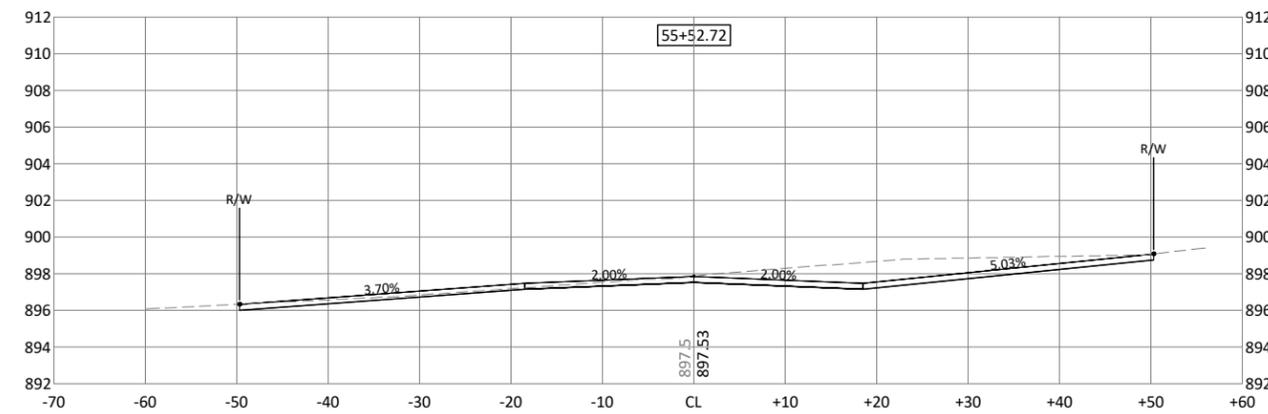
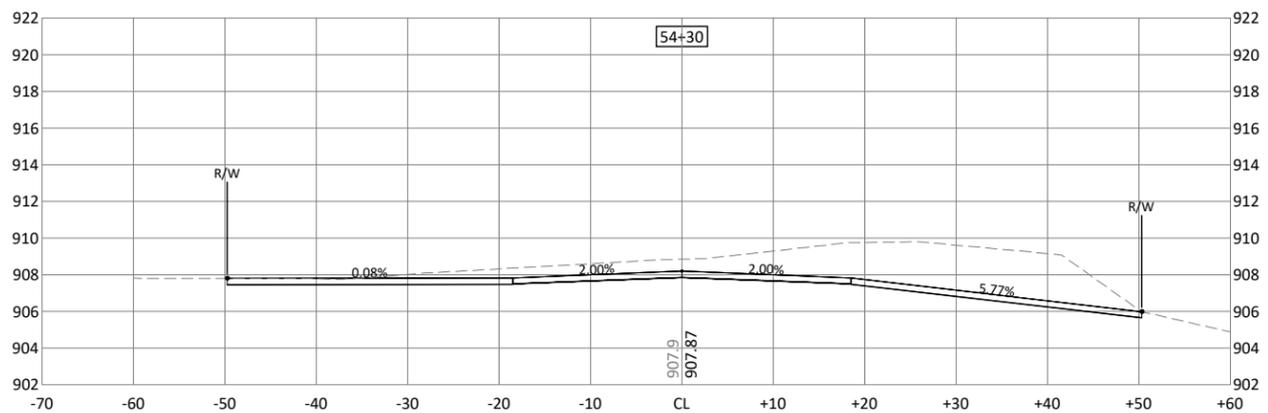
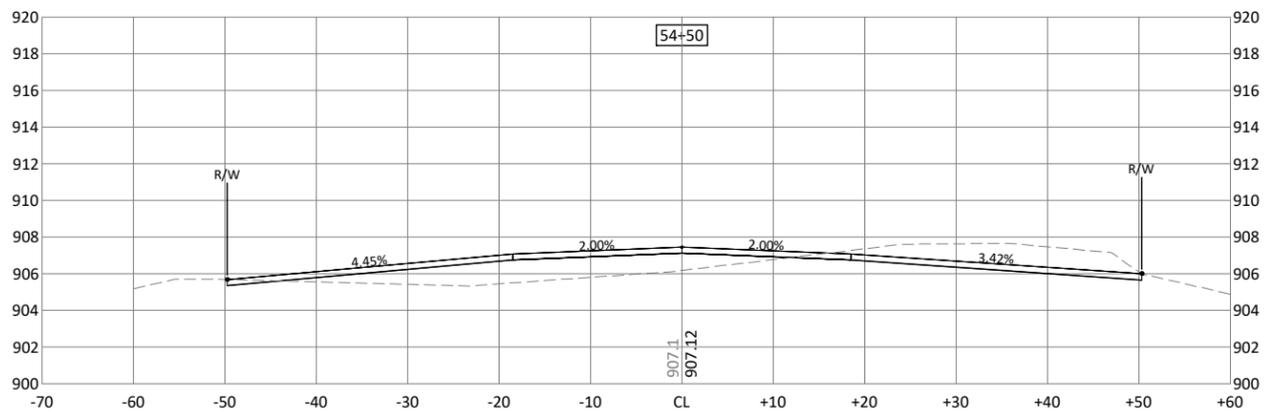
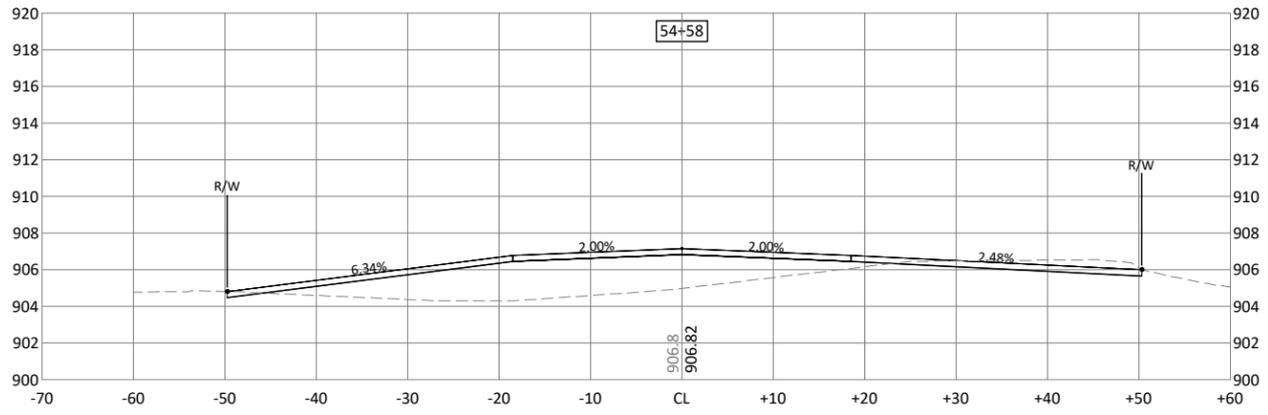
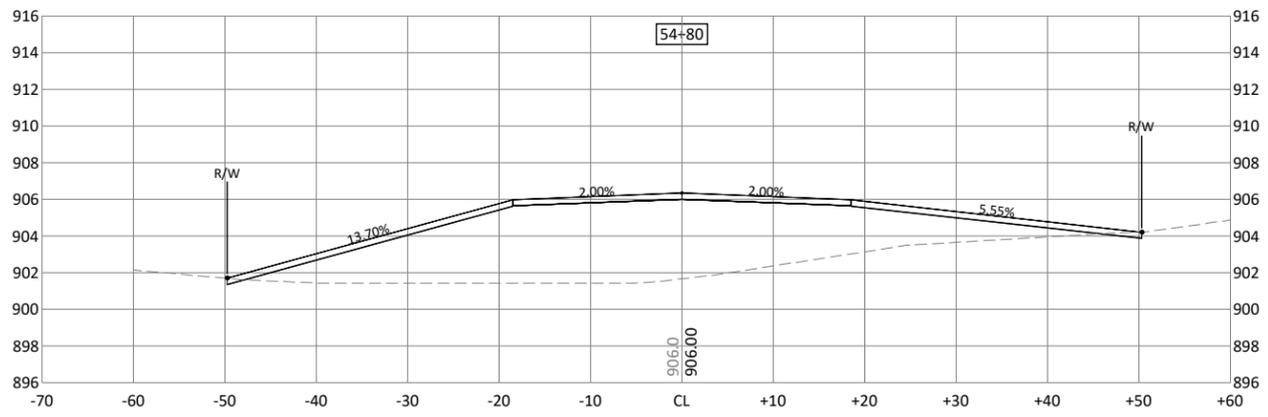


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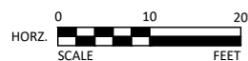
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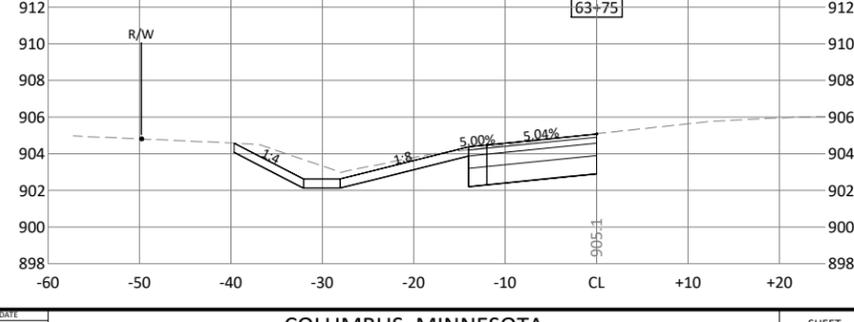
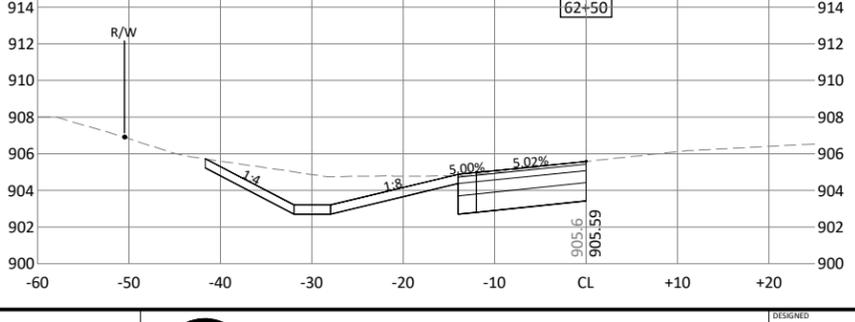
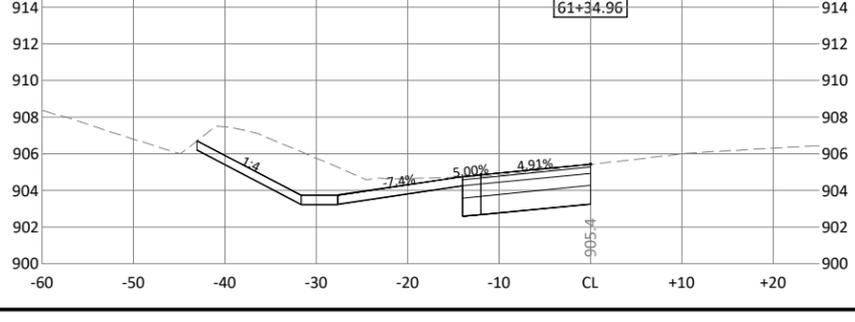
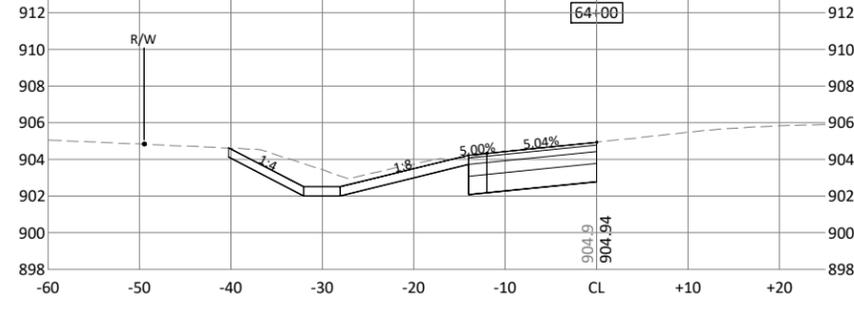
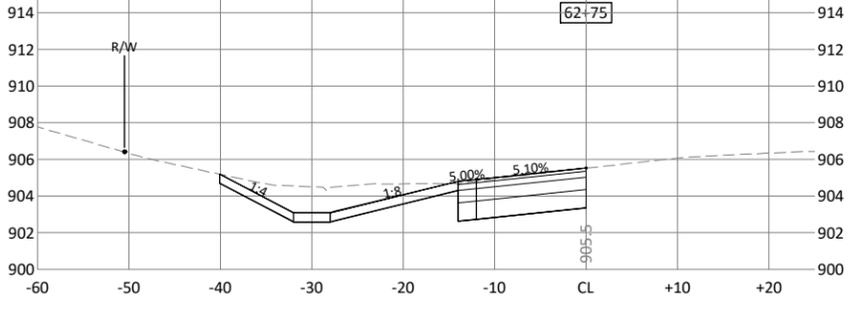
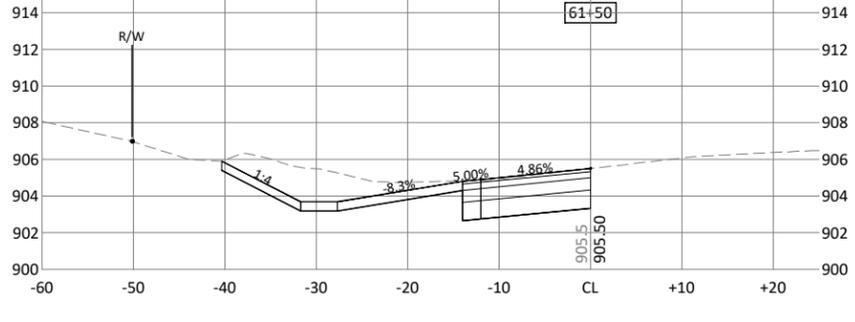
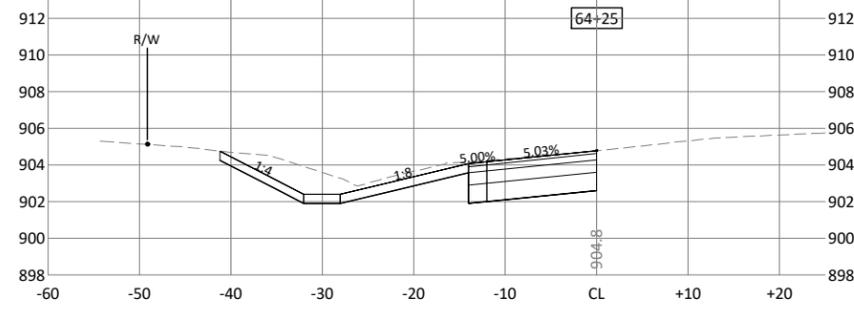
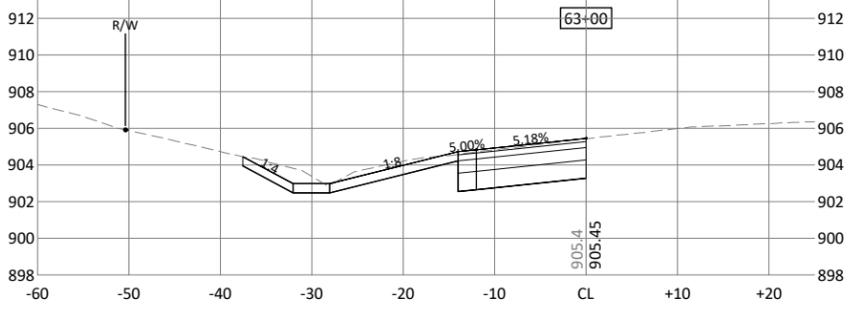
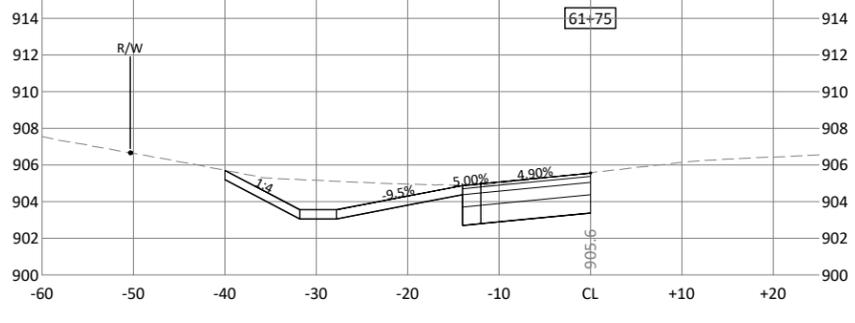
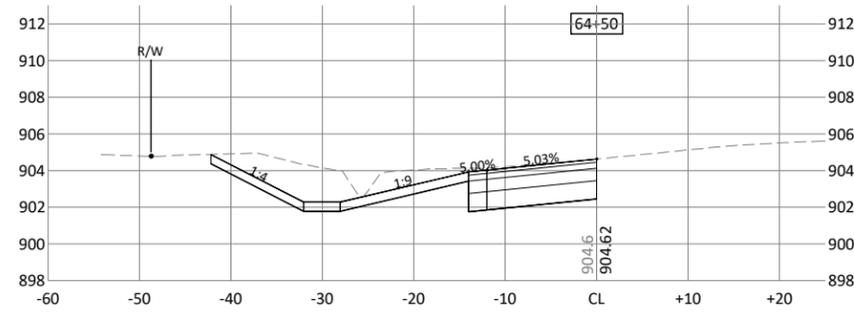
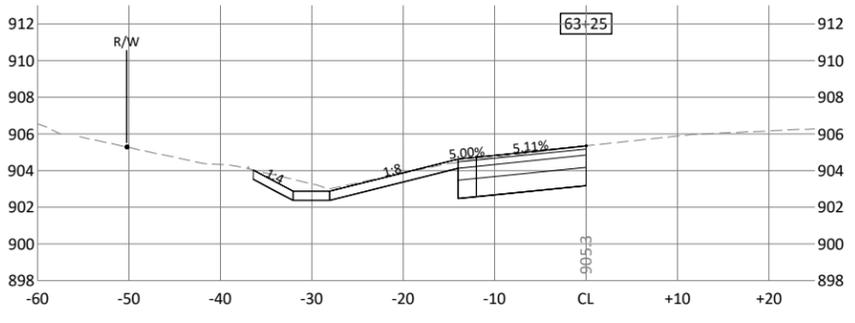
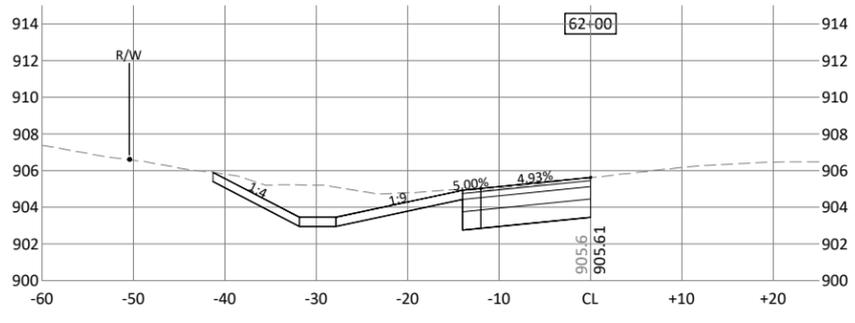
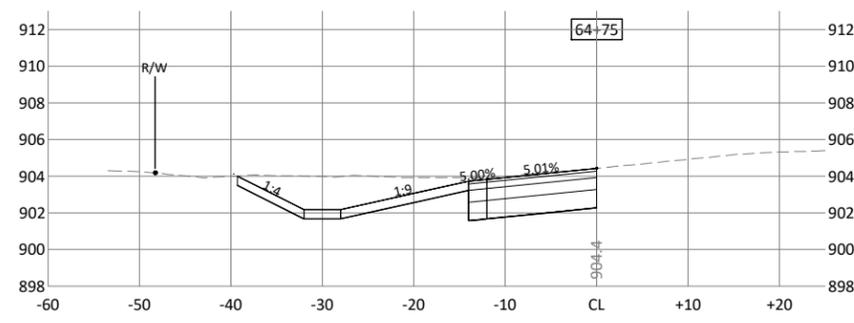
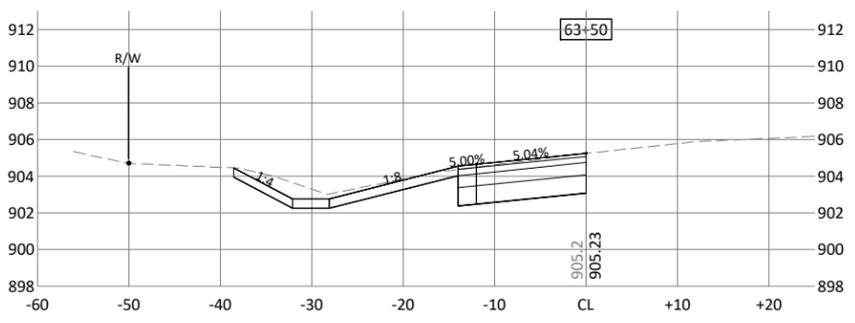
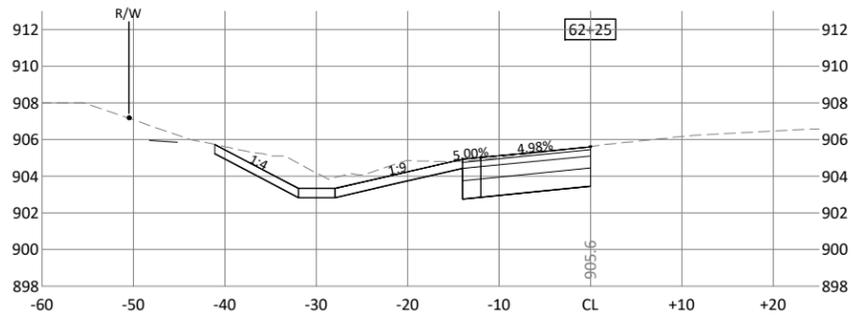
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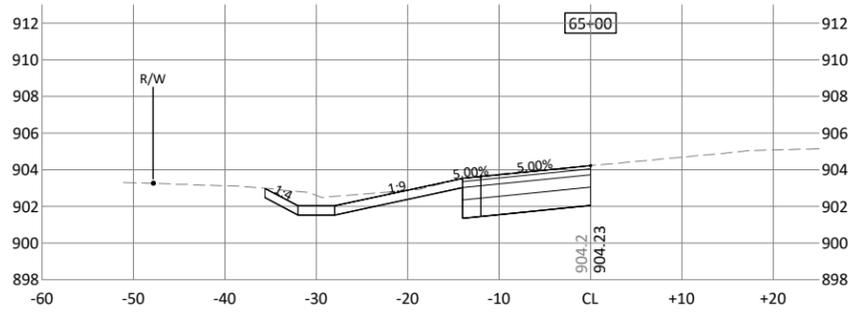
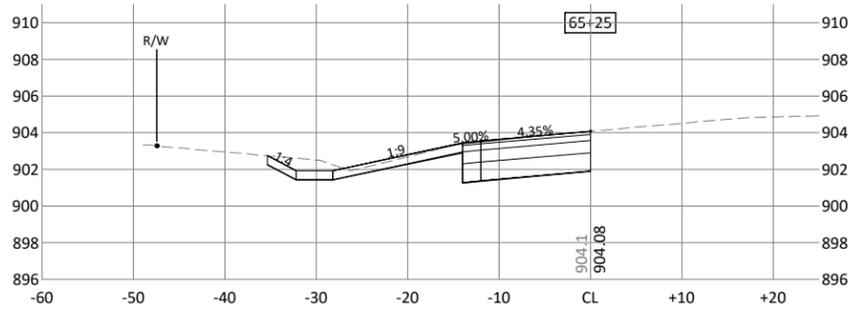
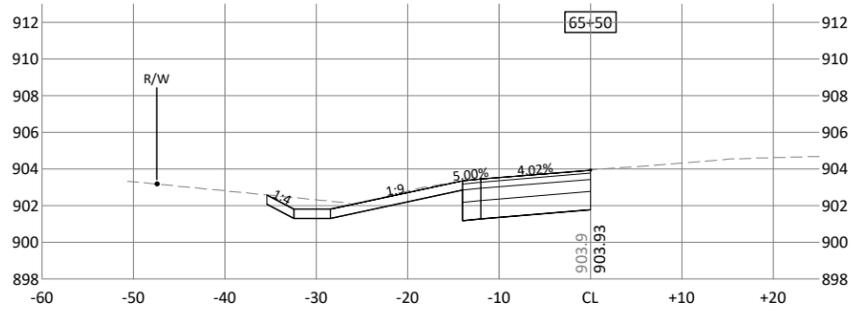
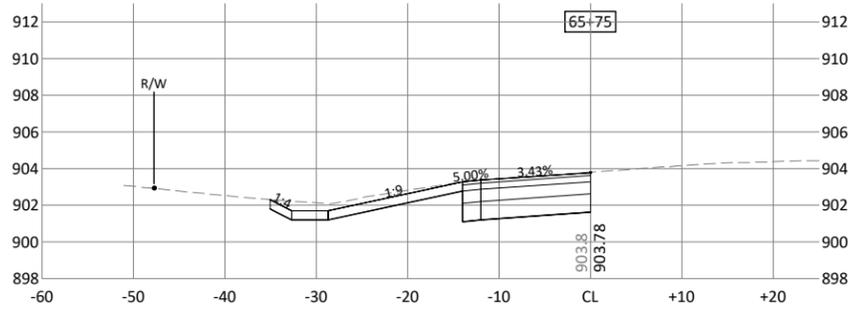
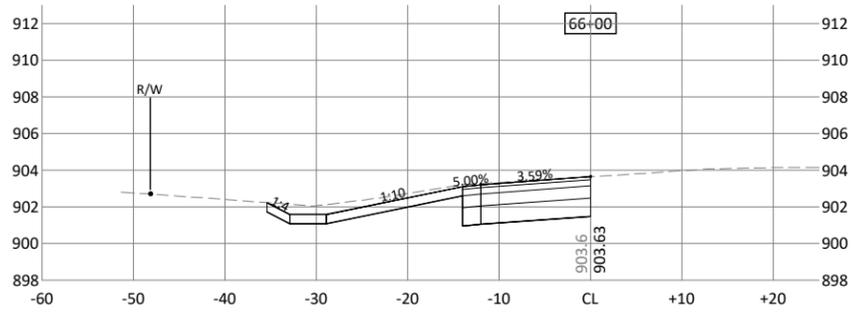


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 LAKE DRIVE NE - CROSS SECTIONS

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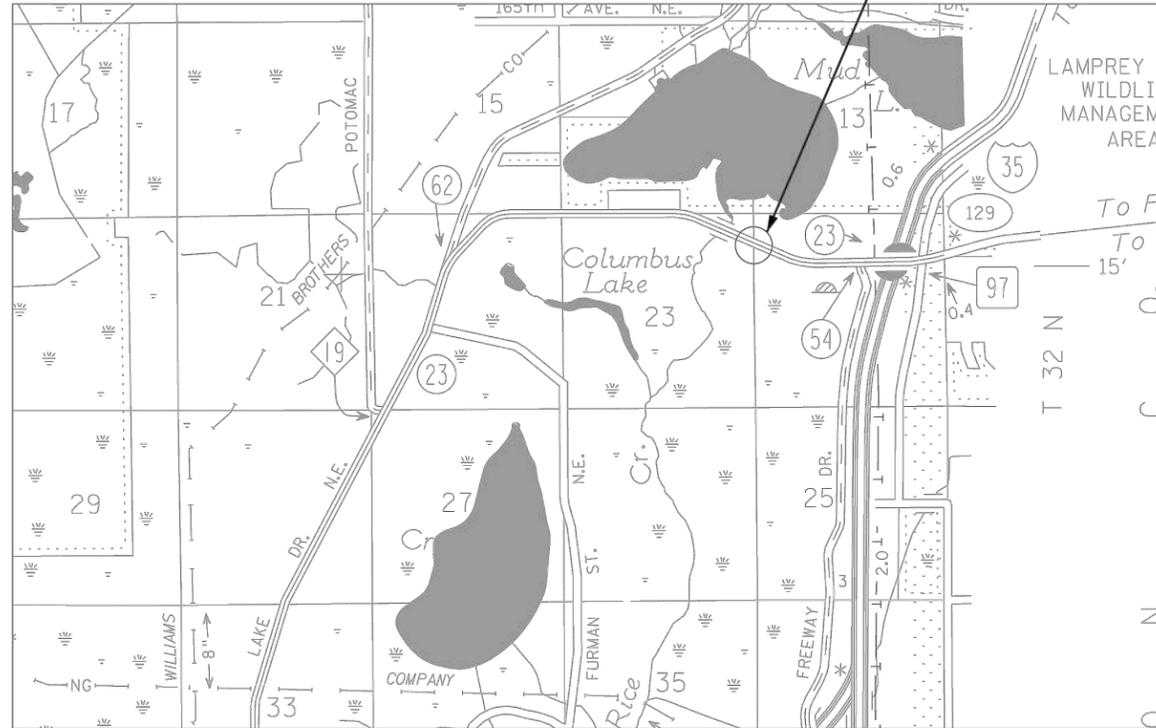
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 LAKE DRIVE NE - CROSS SECTIONS

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ABBREVIATIONS

APS	ACCESSIBLE PEDESTRIAN SIGNAL
AWF	ADVANCE WARNING FLASHER
C.D.	COUNT DOWN
D2-1 (e.g.)	DETECTOR (PHASE 2, NO. 1)
DEG	DEGREES
DWK	DON'T WALK
EQ.G	EQUIPMENT GROUND
EVP	EMERGENCY VEHICLE PRE-EMPTION
F&I	FURNISH AND INSTALL
FL	FLASH/FLASHING
FYA	FLASHING YELLOW ARROW
FYLA	FLASHING YELLOW LEFT ARROW
GLA	GREEN LEFT ARROW
GRN	GREEN INDICATION
GR. RD.	GROUND ROD
GRA	GREEN RIGHT ARROW
GTA	GREEN THRU ARROW
HH	HANDHOLE
HPS	HIGH PRESSURE SODIUM
IND	INDICATION
IMC	INTERMEDIATE METAL CONDUIT
INP	INPLACE
INS. GR.	INSULATED GROUND
JB	JUNCTION BOX
LED	LIGHT EMITTING DIODE
LUM	LUMINAIRE
NEU	NEUTRAL
NMC	NONMETALLIC CONDUIT
P1-1 (e.g.)	PEDESTRIAN INDICATION (PHASE 1, NO. 1)
PB	PUSH BUTTON
PB2-1 (e.g.)	PUSH BUTTON (PHASE 2, NO. 1)
PEC	PHOTOELECTRIC CELL
PED	PEDESTRIAN
PVC	POLYVINYL CHLORIDE (CONDUIT)
RED	RED INDICATION
R&S	REMOVE AND SALVAGE
RLA	RED LEFT ARROW
RSC	RIGID STEEL CONDUIT
S&I	SALVAGE AND INSTALL
SOP	SOURCE OF POWER
SPR	SPARE
STA	STATION
WLK	WALK
YEL	YELLOW INDICATION
YLA	YELLOW LEFT ARROW
YRA	YELLOW RIGHT ARROW

REVISE SIGNAL SYSTEM
LAKE DRIVE (C.S.A.H 23) AND ZURICH STREET



NOT TO SCALE



SYMBOLS

■	HANDHOLE
●	HANDHOLE SPECIAL
○	EQ.G CONNECTION
◀	EVP CONFIRMATORY LIGHT
↔	EVP DETECTOR
◀↔	EVP DETECTOR AND CONFIRMATORY LIGHT
FO	FIBER OPTIC VAULT
△	LUMINAIRE NO.
3	SIGNAL BASE NO.
3-2	SIGNAL FACE NO./FLASHER FACE NO.
BM 4	BARREL MOUNT BASE NO.
WP 1	WOOD POLE NO.
●	SPLICE
V	VIDEO DETECTION
TV	TELEVISION CAMERA (CCTV)

STANDARD PLATES - SIGNAL SYSTEMS

THE FOLLOWING STANDARD PLATES, APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION, SHALL APPLY ON THIS PROJECT

PLATE NO.	DESCRIPTION	PLATE NO.	DESCRIPTION
8110	E TRAFFIC SIGNAL BRACKETING (POLE MOUNTED)	8120	Q POLE FOUNDATION (PA-85)
8111	E TRAFFIC SIGNAL BRACKETING (PEDESTAL MOUNTED) (3 SHEETS)	8121	H TRANSFORMER BASE AND POLE BASE PLATE (2 SHEETS)
8112	I PEDESTAL FOUNDATION	8122	F PEDESTAL AND PEDESTAL BASE (2 SHEETS)
8117	G PRECAST CONCRETE HAND HOLE	8123	G POLE AND MAST ARM (2 SHEETS)
8118	D SERVICE EQUIPMENT AND POLE	8126	L POLE FOUNDATION (PA90 AND PA100)
8119	C GROUND MOUNTED CABINET FOUNDATION	8129	A SHIM AND WASHER
		8130	E SAW CUT LOOP DETECTORS
		8132	B PREFORMED RIGID PVC CONDUIT LOOP DETECTOR

STANDARD PLATES APPLICABLE TO THIS PROJECT

INDEX

X	TITLE SHEET
X-X	DETAIL SHEET
X-X	SIGNAL REVISIONS LAYOUT
X	SIGNAL REVISIONS WIRING DIAGRAM
X	SIGN DETAIL SHEET
X-X	FOR INFORMATION ONLY

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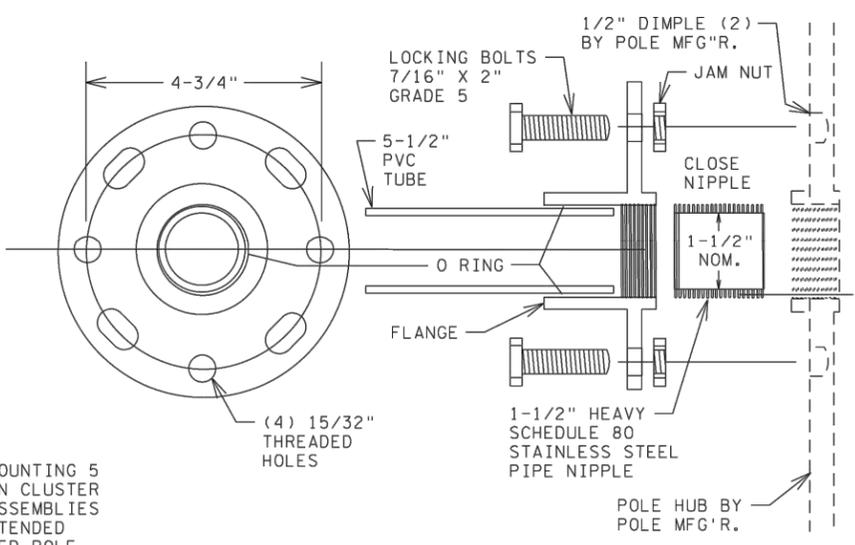
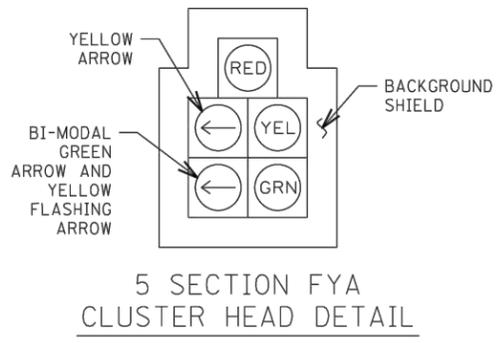
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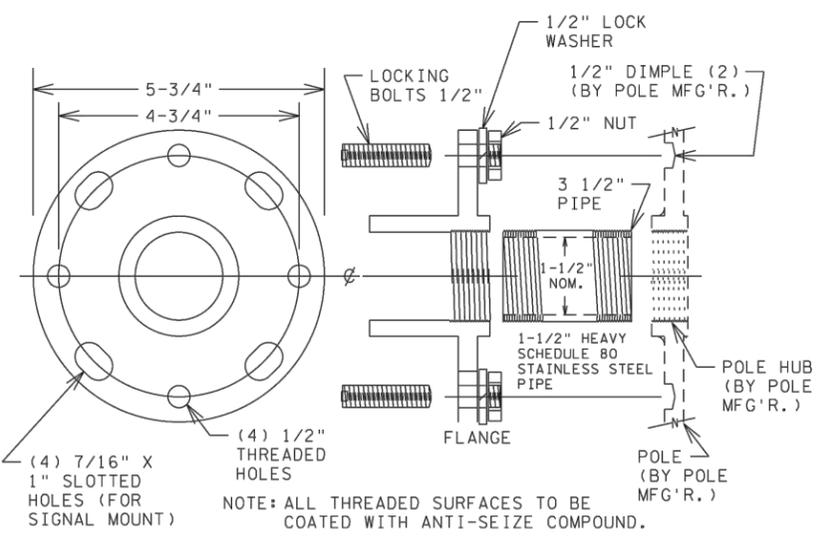
COLUMBUS, MINNESOTA
2020 ZURICH STREET EXTENSION

SIGNAL PLAN

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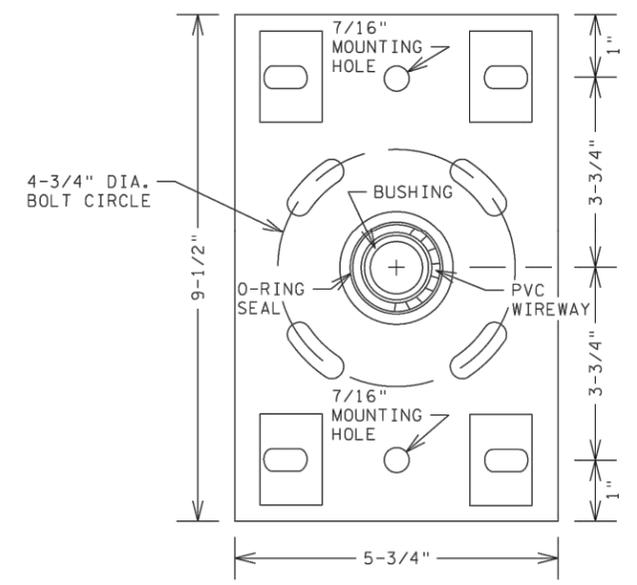


THREADED HUB AND FLANGE POLE ADAPTOR

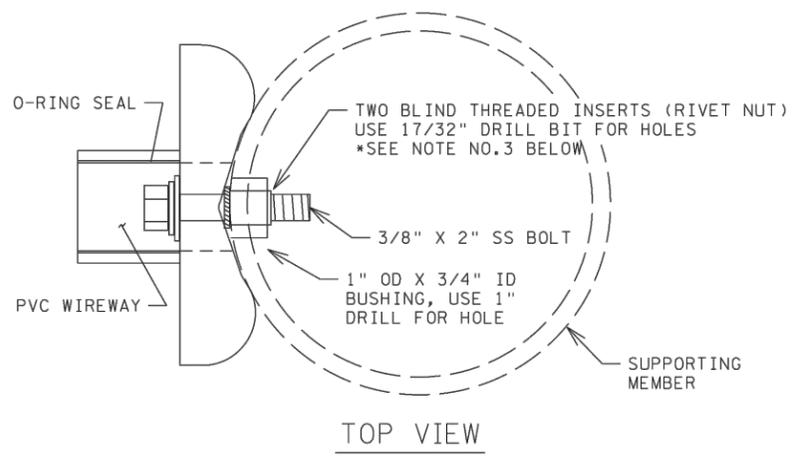


EXTENDED THREADED POLE ADAPTER

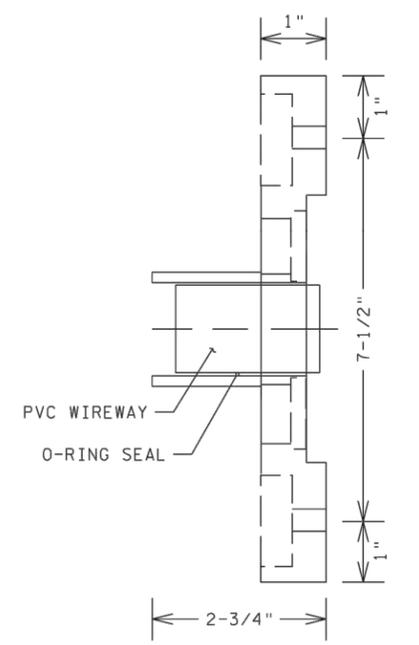
- NOTES:
1. ALL THREADED SURFACES TO BE COATED WITH ANTI-SEIZE COMPOUND.
 2. USE SIGNAL HEAD MOUNTED SPACERS FOR 4 SECTION POLY HEADS.
 3. SEE STANDARD PLATE NUMBER 8123 FOR ADDITIONAL SIGNAL POLE DETAILS.
 4. EXTENDED THREADED POLE ADAPTOR ONLY USED WITH 5 SECTION CLUSTER HEADS.



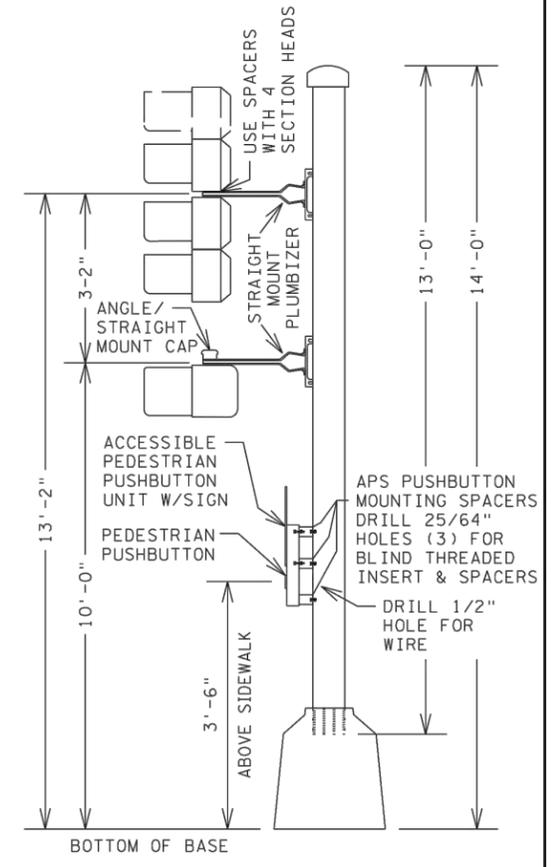
BOLT ON HUB & FLANGE



TOP VIEW



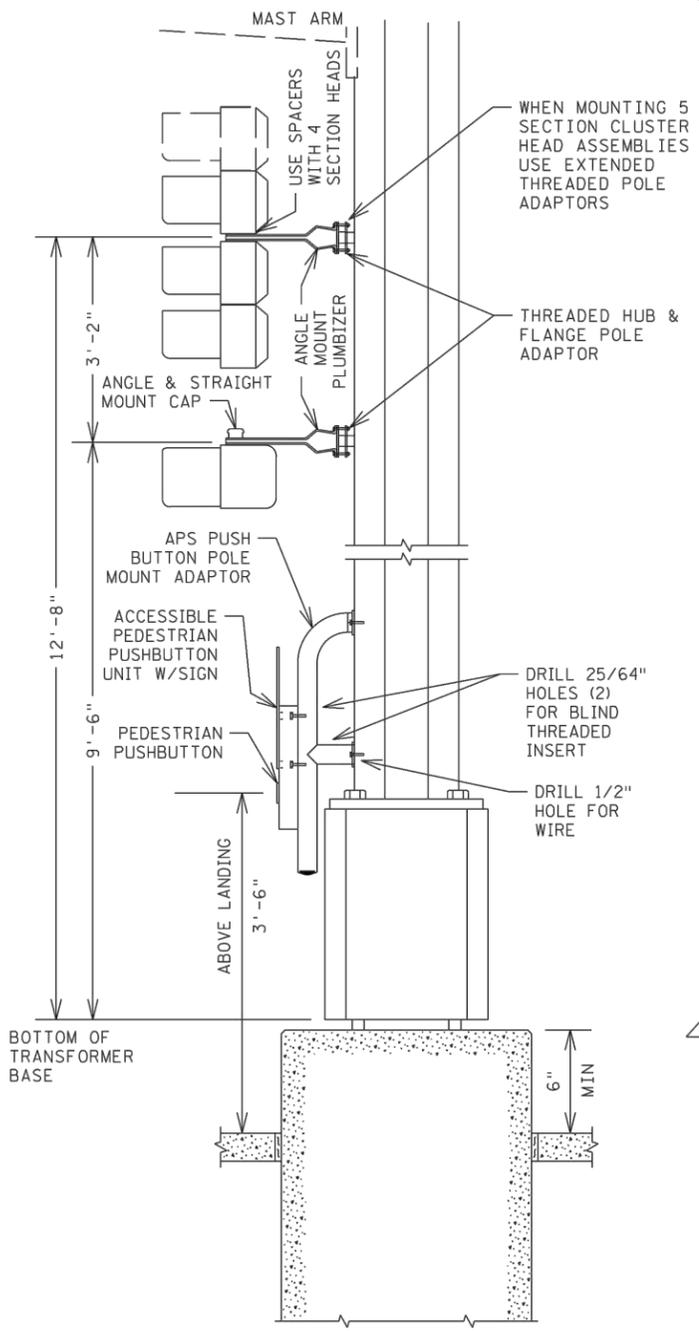
SIDE VIEW



TYPICAL PEDESTAL MOUNTING

NOT TO SCALE

- NOTES:
1. ALL THREADED SURFACES TO BE COATED WITH ANTI-SEIZE COMPOUND.
 2. USE SIGNAL HEAD MOUNTED SPACERS FOR 4 SECTION POLY HEADS.
 3. BLIND THREADED INSERTS (RIVET NUT) MUST BE INSERTED USING MANUFACTURERS SPECIFIC INSERTION TOOL. NO OTHER METHOD IS ACCEPTABLE.
 4. SEE STANDARD PLATE NUMBER 8122 FOR ADDITIONAL PEDESTAL POLE DETAILS.



TYPICAL SIGNAL POLE MOUNTING

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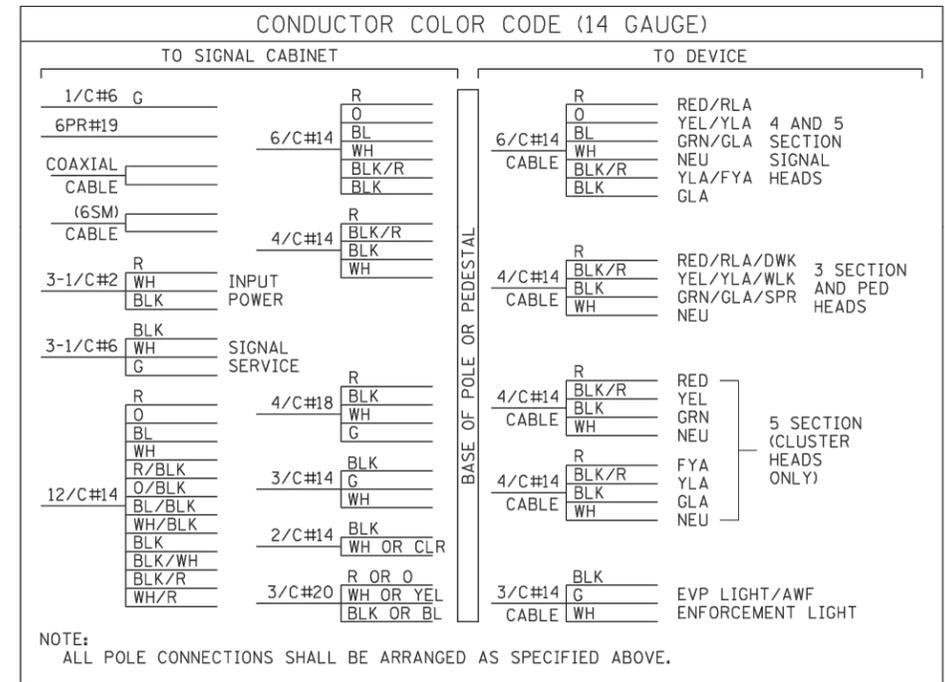
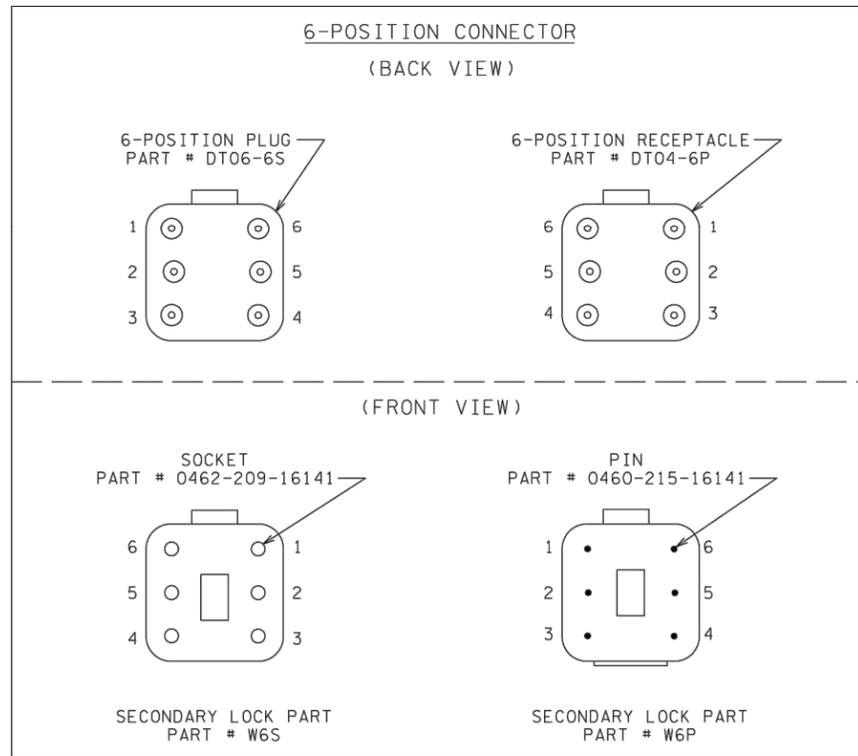
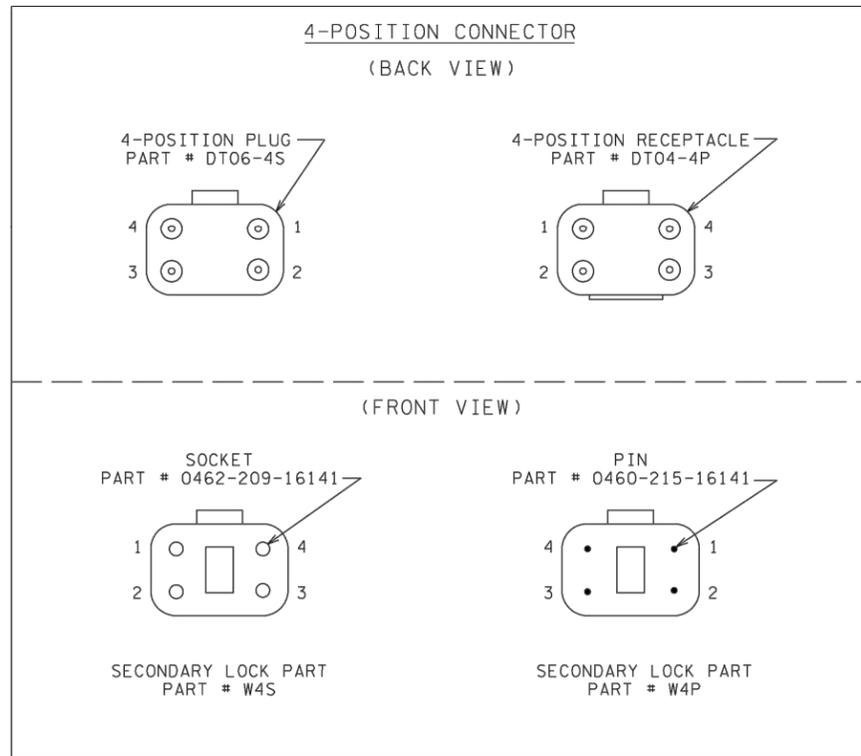


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COLUMBUS, MINNESOTA
2020 ZURICH STREET EXTENSION
SIGNAL PLAN

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4 Position DT Connector (3 Section Head/DWK/WLK)

Wire to Control Cabinet	Connector pin #	Wire to Signal Indication	Signal Indication
R or R/BLK or BLK	1	R	RED or DWK
O or O/BLK or BLK/WH or BLK	2	BLK/R	YEL or WLK
BL or BL/BLK or BLK/R or BLK	3	BLK	GRN or SPR
WH or WH/BLK or WH/R	4	WH	NEU

6 Position DT Connector (4 and 5 Section Heads)

Wire to Control Cabinet	Connector pin #	Wire to Signal Indication	Signal Indication
R	1	R	RED
O	2	O	YEL
BL	3	BL	GRN
WH	4	WH	NEU
O/BLK or BLK/R (6/C)	5	BLK/R	YLA or FYLA
BL/BLK or BLK (6/C)	6	BLK	GLA

WIRE SPECIFICATION CHART

Type	Name	Specification Number
1/C#2	Power Conductors	3815.2B.1
1/C#6	Power Conductors	3815.2B.1
1/C#6 INS.GR.	Grounding Conductors	3815.2B.5
2/C#14	Loop Detector Lead-In Cable	3815.2C.4
3/C#14	Signal Control Cable	3815.2C.3
4/C#14	Signal Control Cable	3815.2C.3
6/C#14	Signal Control Cable	3815.2C.3
12/C#14	Signal Control Cable	3815.2C.3
6PR#19	Telephone Cables Outdoor	3815.2C.6.b
3/C#20	EVP Detector Cable	3815.2C.5

**4 Position DT Connector (EVP LHT/AWF/ENF LHT)
(Used with 3 Conductor Cable Only)**

Wire to Control Cabinet	Connector pin #	Wire to Signal Indication	Signal Indication
BLK	1	BLK	EVP LHT or RED or YEL or ENF LHT or AWF
(Not Used)	2	(Not Used)	(Not Used) (See Note #8)
G	3	G	EQ.G
WH	4	WH	NEU

WIRE COLOR CODE KEY

R	Red
O	Orange
BL	Blue
WH	White
BLK	Black
BRN	Brown
CL	Clear
G	Green
R/BLK	Red with Black Stripe
O/BLK	Orange with Black Stripe
BL/BLK	Blue with Black Stripe
WH/BLK	White with Black Stripe
WH/R	White with Red Stripe
BLK/WH	Black with White Stripe
BLK/R	Black with Red Stripe

**4 Position DT Connectors
(Use Two Connectors for 5 Section FYA Cluster Heads)**

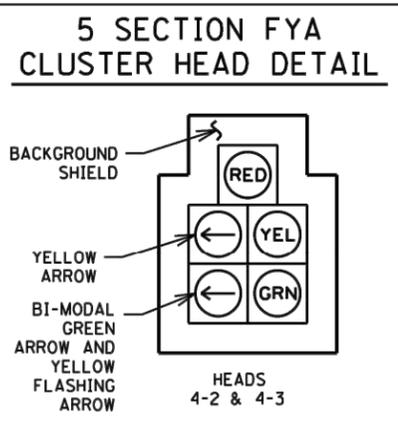
12 Conductor Wire to Control Cabinet	Connector pin #	4 Conductor to Signal Indication	Signal Indication
R	1	R	RED
O	2	BLK/R	YEL
BL	3	BLK	GRN
WH	4	WH	NEU
R/BLK	1	R	FYA
O/BLK	2	BLK/R	YLA
BL/BLK	3	BLK	GLA
WH/BLK	4	WH	NEU

NOTES:

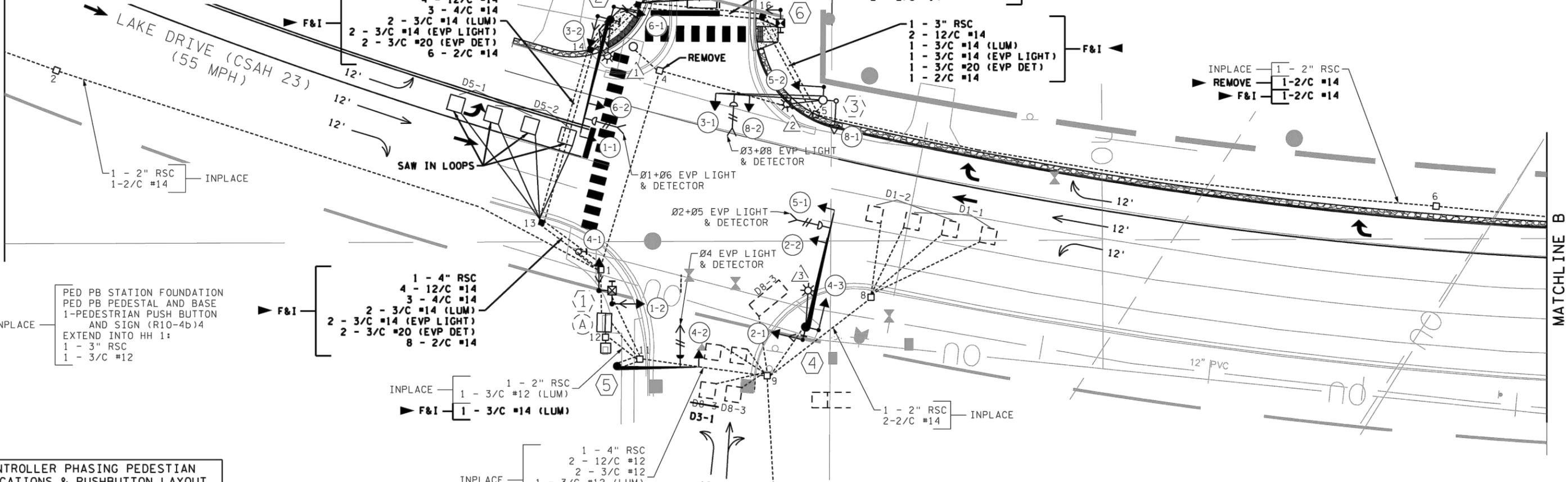
- DT04-P RECEPTACLE SHALL BE TERMINATED TO THE WIRING HARNESS RUNNING FROM THE BASE/JUNCTION BOX OF THE POLE TO SIGNAL INDICATIONS.
- DT06-S PLUG SHALL BE TERMINATED TO THE CABLES RUNNING FROM THE TRAFFIC SIGNAL CABINET TO THE BASE/JUNCTION BOX OF THE POLE.
- THERE SHALL BE A MINIMUM OF 24 INCHES OF SLACK ON EACH CABLE IN EVERY POLE BASE/JUNCTION BOX.
- STRIP A MAXIMUM OF 6 INCHES OF THE OUTER JACKET OF EACH SIGNAL CABLE.
- STRIP .250 INCHES OF INSULATION FROM EACH INDIVIDUAL CONDUCTOR.
- CRIMP PINS OR SOCKETS USING RATCHETING TYPE CRIMPING TOOL HDT-48-00. NO OTHER CRIMPING TOOL WILL BE ALLOWED.
- WIRES MUST BE TERMINATED AS DETAILED IN TABLES DEPENDING ON WIRE COUNT.
- ANY UNUSED PIN MUST HAVE A SEALING PLUG PLACED IN BOTH THE PLUG & RECEPTACLE (PART # 114017).
- LABEL EACH HALF OF THE CONNECTOR (PLUG AND RECEPTACLE) WITH THE DEVICE DESIGNATION (AS INDICATED IN THE WIRING DIAGRAM) USING A PERMANENT BLACK MARKER.

SIGNAL HEAD CHART						
FACE	R	Y	Y	FYA	G	G
1-1, 1-2	←	●	←	←	●	●
2-1, 2-2	●	●	←	←	●	●
3-1, 3-2	←	●	←	←	●	●
4-1	●	●	←	←	●	●
4-2, 4-3	●	●	←	←	●	●
5-1, 5-2	←	●	←	←	●	●
6-1, 6-2	●	●	←	←	●	●
8-1, 8-2	●	●	←	←	●	●

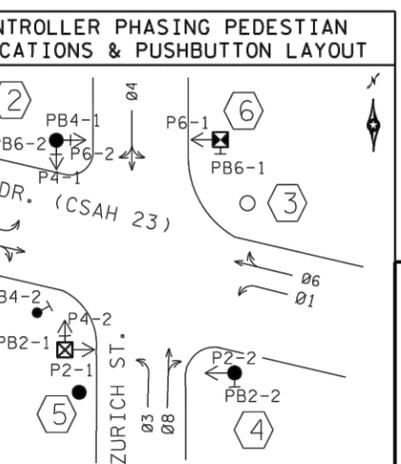
-ALL SIGNAL INDICATIONS SHALL BE 12" LED
 -ALL SIGNAL HEADS SHALL BE BLACK POLYCARBONATE WITH BACKGROUND SHIELDS
 -FYA DENOTES FLASHING YELLOW ARROW



NOTE: 4-2 & 4,3 ARE 5-SECTION BI-MODAL DOGHOUSE SIGNAL HEADS. FYA AND GLA SHARE THE SAME SECTION. (SEE 5 SECTION FYA CLUSTER HEAD DETAIL)



LOOP DETECTOR CHART			DISTANCE TO STOP BAR
DESIGNATION	SIZE/FT.		
D1-1	2-6'x6'		20', 50'
D1-2	2-6'x6'		5', 35'
D2-1	1-6'x6'		475'
D3-1	2-6'x6'		5', 20'
F&I D4-1	2-6'x6'		5', 20'
F&I D4-2	2-6'x6'		5', 20'
F&I D5-1	2-6'x6'		20', 50'
F&I D5-2	2-6'x6'		5', 35'
D6-1	1-6'x6'		475'
D8-1	1-6'x6'		120'
D8-2	1-6'x6'		120'
D8-3	2-6'x6', 1-6'x15'		5', 20', -30'
D8-4	D3-1		5', 20'



SIGNAL SYSTEM OPERATION

- THE SIGNAL SYSTEM FLASH MODE IS ALL RED.
- NORMAL OPERATION IS 6 PHASE, WITH PHASES 1 AND 5 BEING FLASHING YELLOW ARROWS BY TIME OF DAY.
- PHASES 2 AND 6 SHALL BE ON VEHICLE RECALL.

- NOTES:
1. THE EXACT LOCATION OF THE HANDHOLES, POLES, PEDESTALS, LOOP DETECTORS AND EQUIPMENT PAD SHALL BE VERIFIED IN THE FIELD BY ENGINEER.
 2. FOR TYPE D SIGNS SEE DETAIL SHEET. ALL SIGNS REQUIRED ARE INCIDENTAL.
 3. FOR PAVEMENT MARKING DETAILS SEE SIGNING AND STRIPING PLAN.
 4. FOR CONSTRUCTION OF PEDESTRIAN CURB RAMPS, CONCRETE WALK AND MEDIAN WORK SEE ADA-INTERSECTION DETAIL SHEET.
 5. THIS PLAN SPECIFIES CONDUIT SIZES, TYPES, AND GENERAL LOCATIONS. THE EXACT LOCATIONS WILL BE DETERMINED IN THE FIELD. CONDUITS UNDER THE ROADWAYS SHALL BE TRENCHED UNLESS BORING IS REQUIRED.
 6. ALL NEW CONDUIT SHALL BE PVC - SWORK, SCHEDULE 80 OR HDPE SCHEDULE 80 AND SHALL CARRY 1/C 6 INSULATED GROUNDING CONDUCTOR AS SHOWN IN THE PLAN.
 7. ALL WIRES LISTED ARE AWG (AMERICAN WIRE GAUGE).
 8. DAVIT LUMINAIRE CABLE IS UN-SPLICED FROM CABINET TO LUMINAIRE.
 9. EVP DETECTOR CABLE IS UN-SPLICED FROM CABINET.
 10. THE CONTRACTOR SHALL LOCATE AND VERIFY INPLACE UTILITIES PRIOR TO COMMENCING

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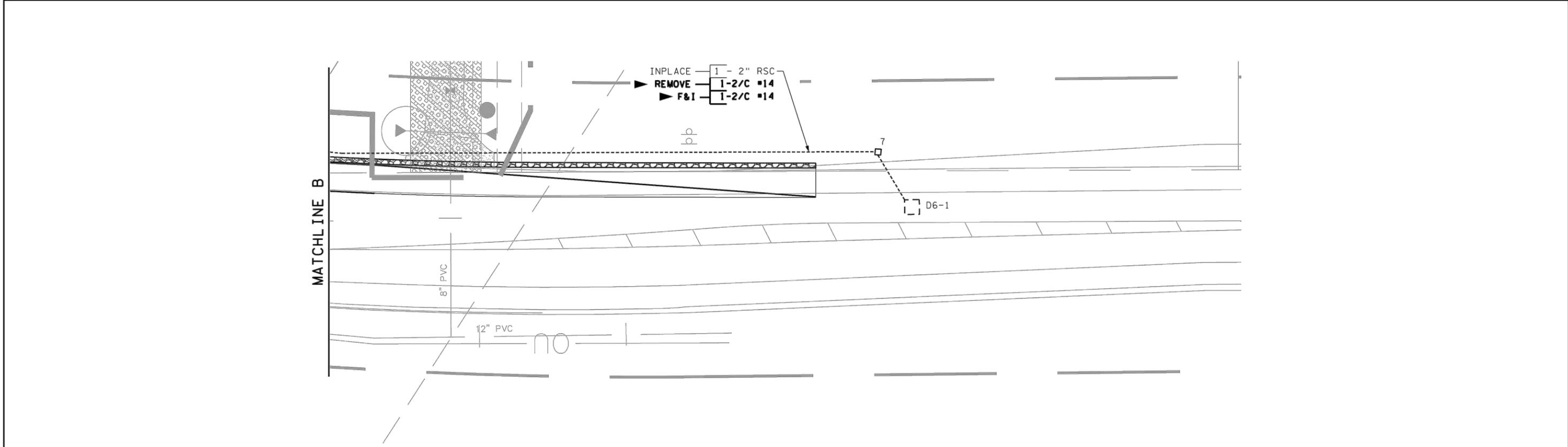
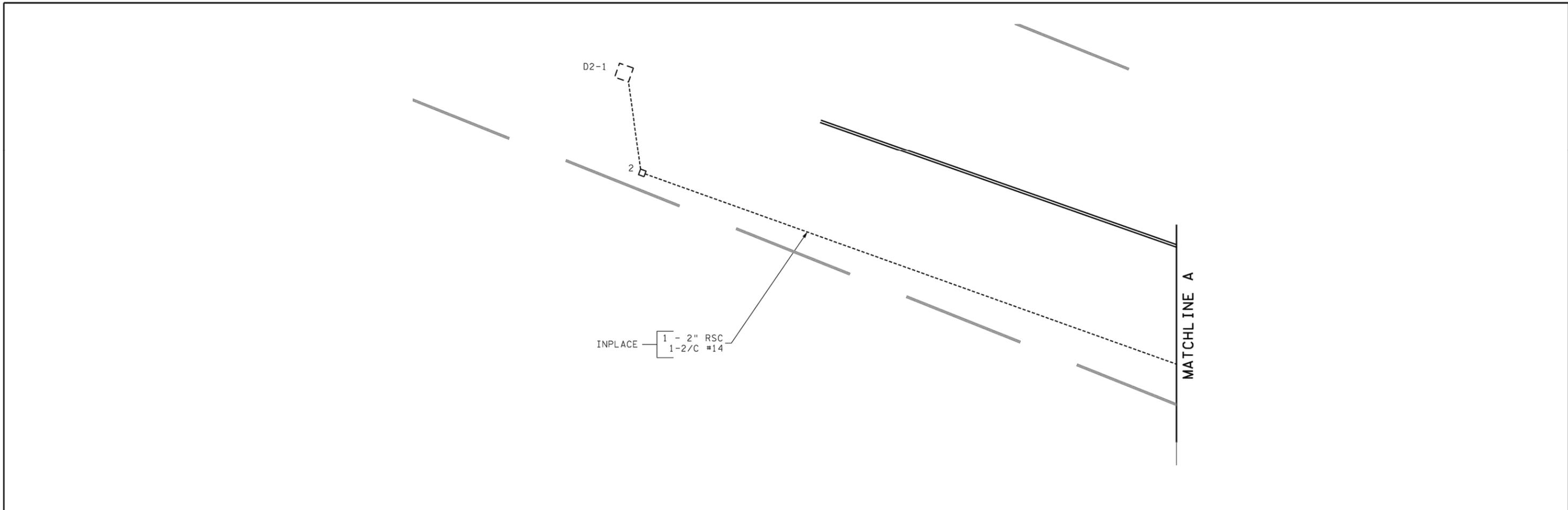


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2020 ZURICH STREET EXTENSION
SIGNAL PLAN

SHEET 31
OF 37



- (A) CONTROLLER AND CABINET
CABINET FOUNDATION
EXTEND INTO HH-12:
METERED SIGNAL SERVICE
2" RSC
3-1/C #6
EXTEND TO HH-1:
4" RSC
1 - 3/C #12
1 - 2/C #14
EXTEND TO HH-11:
4" RSC
3 - 12/C #12
4 - 3/C #12
6 - 2/C #14
1 - 3/C #20
- INPLACE
- REMOVE INTO TO HH-1:
3 - 12/C #12
3 - 3/C #12
2 - 2/C #14
1 - 3/C #20
- F&I INTO HH 1:
4 - 12/C #14
3 - 4/C #14
2 - 3/C #14 (LUM)
2 - 3/C #14 (EVP LIGHT)
2 - 3/C #20 (EVP DET)
8 - 2/C #14
INTO HH 11:
1 - 6/C #14
1 - 4/C #14
1 - 3/C #14 (EVP LIGHT)
1 - 3/C #20 (EVP DET)

- (B) SIGNAL SERVICE CABINET
CABINET FOUNDATION
EXTEND INTO HH-12:
2" RSC
METERED SIGNAL SERVICE
3-1/C #2
UNMETERED LIGHTING SERVICE
3-3/C #12 (LUM.)
- INPLACE
- F&I 1 - 3/C #14 (LUM)
- INPLACE EXTEND INTO CONTROLLER:
2" RSC
METERED SIGNAL SERVICE
3-1/C #6

- (C) INPLACE SOP - INPLACE WOOD POLE TRANSFORMER
(CONNEXUS)

- (2) PA100 POLE FOUNDATION
TYPE PA100-A40
2 - ONE WAY SIGNALS OVERHEAD
(0' AND 12' FROM END OF MAST ARM)
1 - POLE MOUNTED ONE-WAY SIGNAL AT 225 DEG
1 - POLE MOUNTED PEDESTRIAN INDICATION AT 45 DEG
1 - PEDESTRIAN PUSH BUTTON AND SIGN (R10-4b)
1 - R9-3a SIGN
3" RSC INTO HH-4
2 - 12/C #12
2 - 3/C #12
1 - 3/C #12 (LUM.)
1 - 3/C #20
- REMOVE
- S&I 1 - TYPE D SIGN (D-2) (SEE SIGN DETAIL)
1 - ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT
(PHASE 2+5) AT 6'
1 - D40-9 (DAVIT AT 350 DEG)
- F&I PA100 POLE FOUNDATION
TYPE PA100-A45
1-ANGLE MOUNT SIGNAL OVERHEAD
AT 0'
1-STRAIGHT MOUNT SIGNAL OVERHEAD
AT 12'
2-ANGLE MOUNT SIGNALS AT 90 AND 180 DEG
2-ANGLE MOUNT C.D. PED HEAD AT 90 AND
180 DEG
2-APS PB AND SIGN (LT & RT ARROW)(PB4-1)
(PB6-2) AND APS MOUNTING BRACKET
1-R10-X12 SIGN (SEE SIGN DETAIL)
1-LUMINARIE (LED)
3" RSC INTO HH-14:
2 - 12/C #14
2 - 4/C #14
1 - 3/C #14 (LUM)
1 - 3/C #14 (EVP LIGHT)
1 - 3/C #20 (EVP DET)
2 - 2/C #14

- (1) PEDESTAL FOUNDATION
13' PEDESTAL AND BASE
2 - POLE MOUNTED PEDESTRIAN INDICATION
1 - PEDESTRIAN PUSH BUTTONS
AND SIGNS (R10-4b)
3" RSC INTO HH-11:
1 - 12/C #12
2 - 3/C #12
- INPLACE
- REMOVE 1 - POLE MOUNTED ONE-WAY SIGNAL AT 225 DEG
- F&I 2-ANGLE MOUNT SIGNALS AT 90 AND 180 DEG

- (5) PA90 POLE FOUNDATION
TYPE PA90-A30
1-ANGLE MOUNT SIGNAL OVERHEAD
AT 0'
1-TYPE D SIGN (D-1)(SEE SIGN DETAIL)
1-R10-X12 SIGN (SEE SIGN DETAIL)
1-ONE WAY EVP DETECTOR AND
CONFIRMATORY LIGHT (04) AT 6'
3" RSC TO HH 11:
1 - 6/C #14
1 - 3/C #14 (EVP LIGHT)
1 - 3/C #20 (EVP DET)
- F&I

- (3) PA100 POLE FOUNDATION
TYPE PA100-A40-D40-9 (DAVIT AT 350 DEG)
1 - POLE MOUNTED ONE-WAY SIGNAL AT 225 DEG
1 - ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT
(PHASE X)
1 - R9-3a SIGN FACING POLE 4
1 - TYPE D SIGN (D-1) (SEE SIGNING DETAILS)
3" RSC INTO HH-5
- INPLACE
- REMOVE 1-ANGLE MOUNT SIGNAL OVERHEAD
AT 0'
1-LUMINAIRE (250W HPS)
- F&I 1-ANGLE MOUNT SIGNAL OVERHEAD
AT 0'
1-STRAIGHT MOUNT SIGNAL OVERHEAD
AT 12'
1-R10-X12 SIGN (SEE SIGN DETAIL)
1-LUMINAIRE (LED)
INTO HH 5:
2 - 12/C #14
1 - 3/C #14 (LUM)
1 - 3/C #14 (EVP LIGHT)
1 - 3/C #20 (EVP DET)

- (4) 3" RSC INTO HH-9
2 - 12/C #12
1 - 3/C #12
1 - 3/C #12 (EVP LIGHT)
1 - 3/C #20 (EVP DET)
1 - 3/C #12 (LUM)
- INPLACE
- REMOVE PA90 POLE FOUNDATION
TYPE PA90-A35
1 - ONE WAY SIGNALS OVERHEAD
(0' FROM END OF MAST ARM)
1 - POLE MOUNTED ONE-WAY SIGNAL AT 225 DEG
1 - POLE MOUNTED PEDESTRIAN INDICATION AT 225 DEG
1 - PEDESTRIAN PUSH BUTTON AND SIGN (R10-4b)
1 - LUMINAIRE (250W HPS)
- S&I 1 - TYPE D SIGN (D-2) (SEE SIGN DETAIL)
1 - ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT
(PHASE 2+5) AT 6'
1 - D40-9 (DAVIT AT 350 DEG)
- F&I PA100 POLE FOUNDATION
TYPE PA100-A45
1-ANGLE MOUNT SIGNAL OVERHEAD
AT 0'
1-STRAIGHT MOUNT SIGNAL OVERHEAD
AT 12'
2-ANGLE MOUNT SIGNALS AT 90 AND 180 DEG
1-ANGLE MOUNT C.D. PED HEAD AT 180 DEG
1-APS PB AND SIGN (LT ARROW)(PB2-2)
AND APS MOUNTING BRACKET
1-R10-X12 SIGN (SEE SIGN DETAIL)
1-LUMINAIRE (LED)
INTO HH 9:
1 - 4/C #14

- (6) PEDESTAL FOUNDATION
10' PEDESTAL POLE (PLUS BASE)
1-APS PB AND SIGN (LT ARROW)(PB6-1)
AND APS MOUNTING BRACKET
1-ANGLE MOUNT C.D. PED HEAD AT 270
2" RSC INTO HH 16:
1 - 4/C #14
1 - 2/C #14
- F&I

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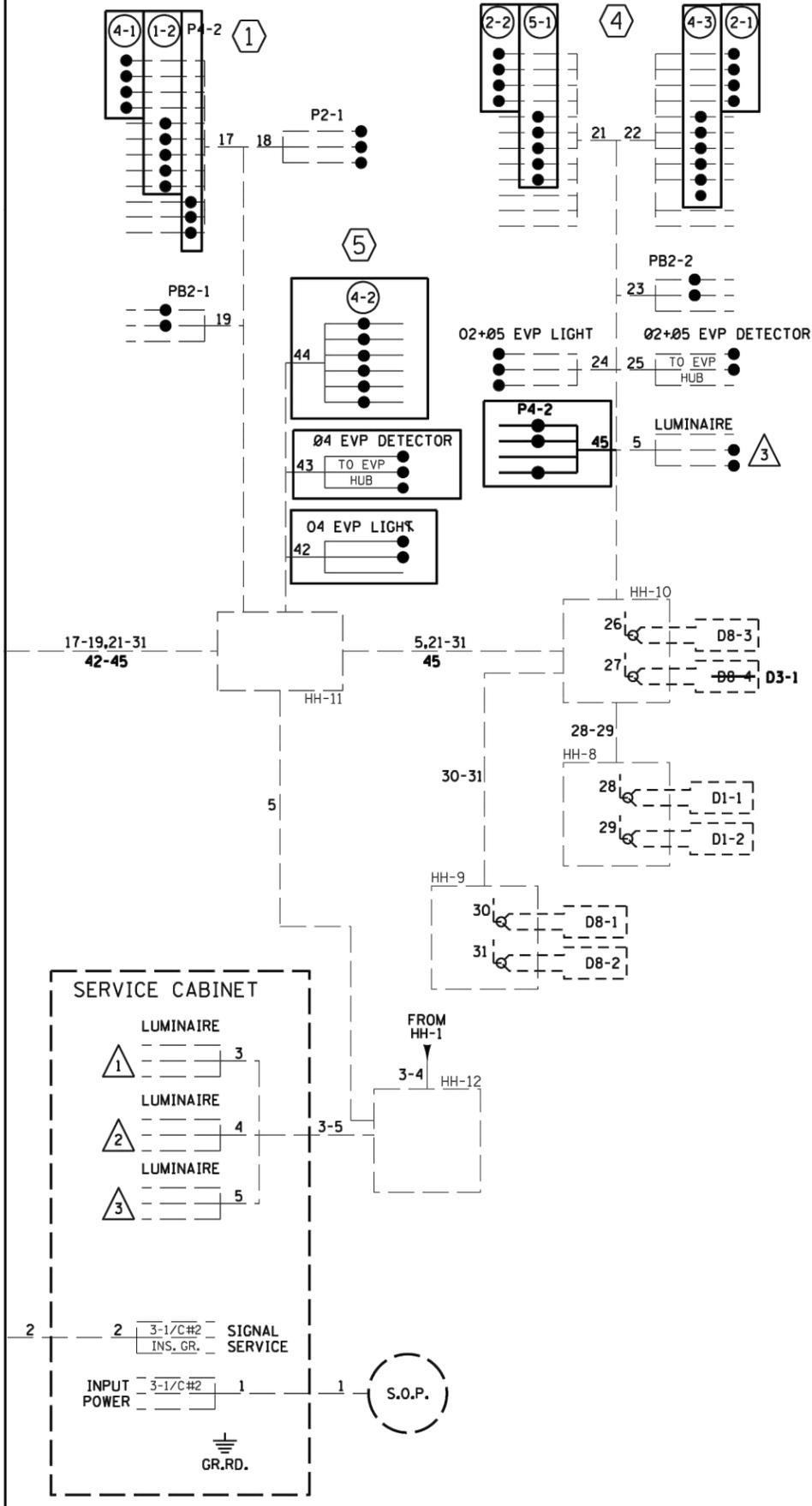
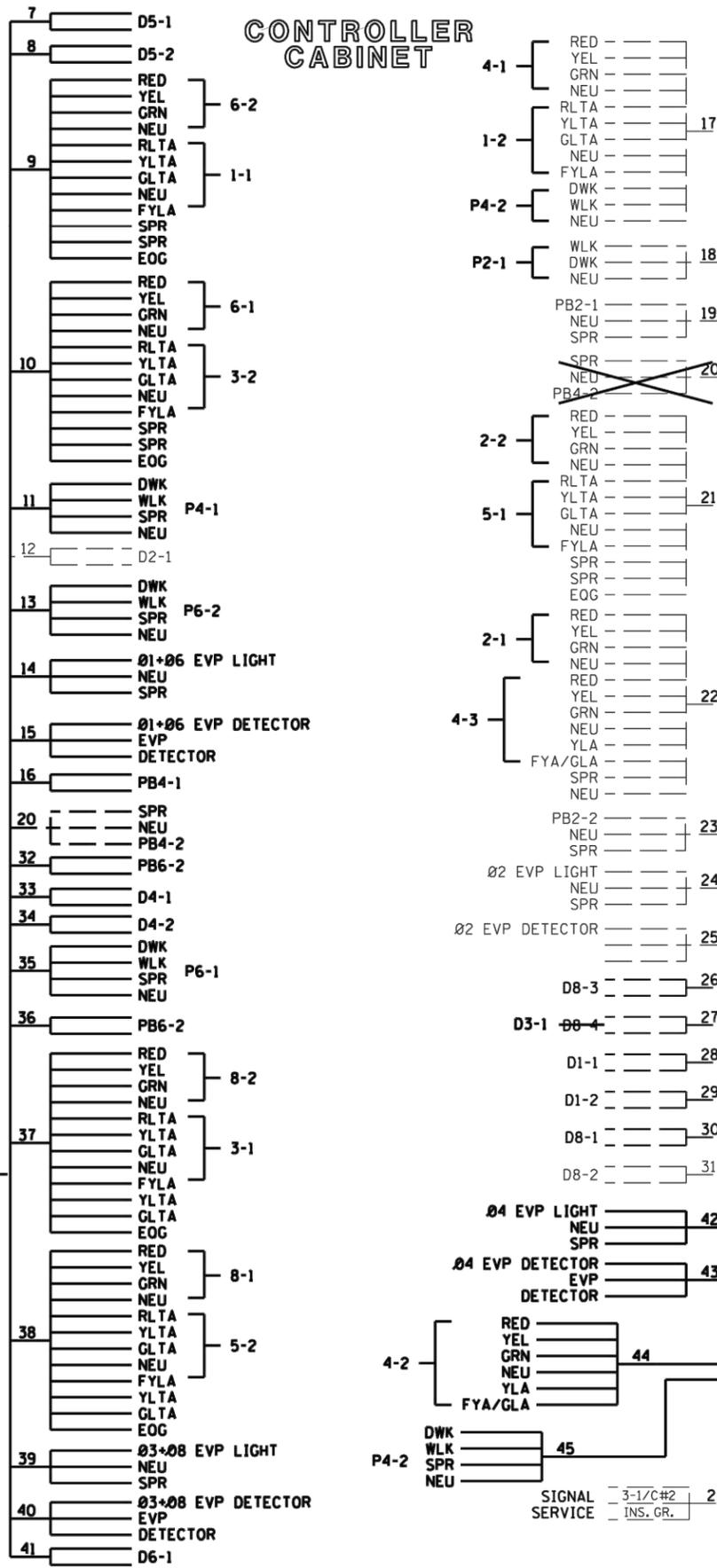
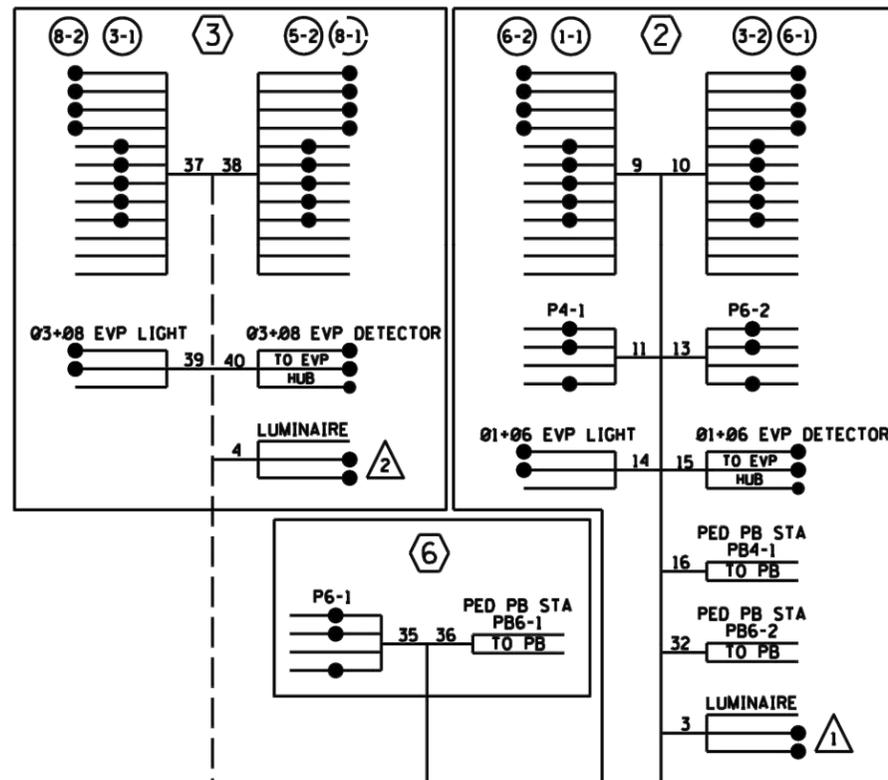
PETER M. LEMKE
LIC. NO. 40118 DATE 05/21/2020



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COLUMBUS, MINNESOTA
2020 ZURICH STREET EXTENSION
SIGNAL PLAN



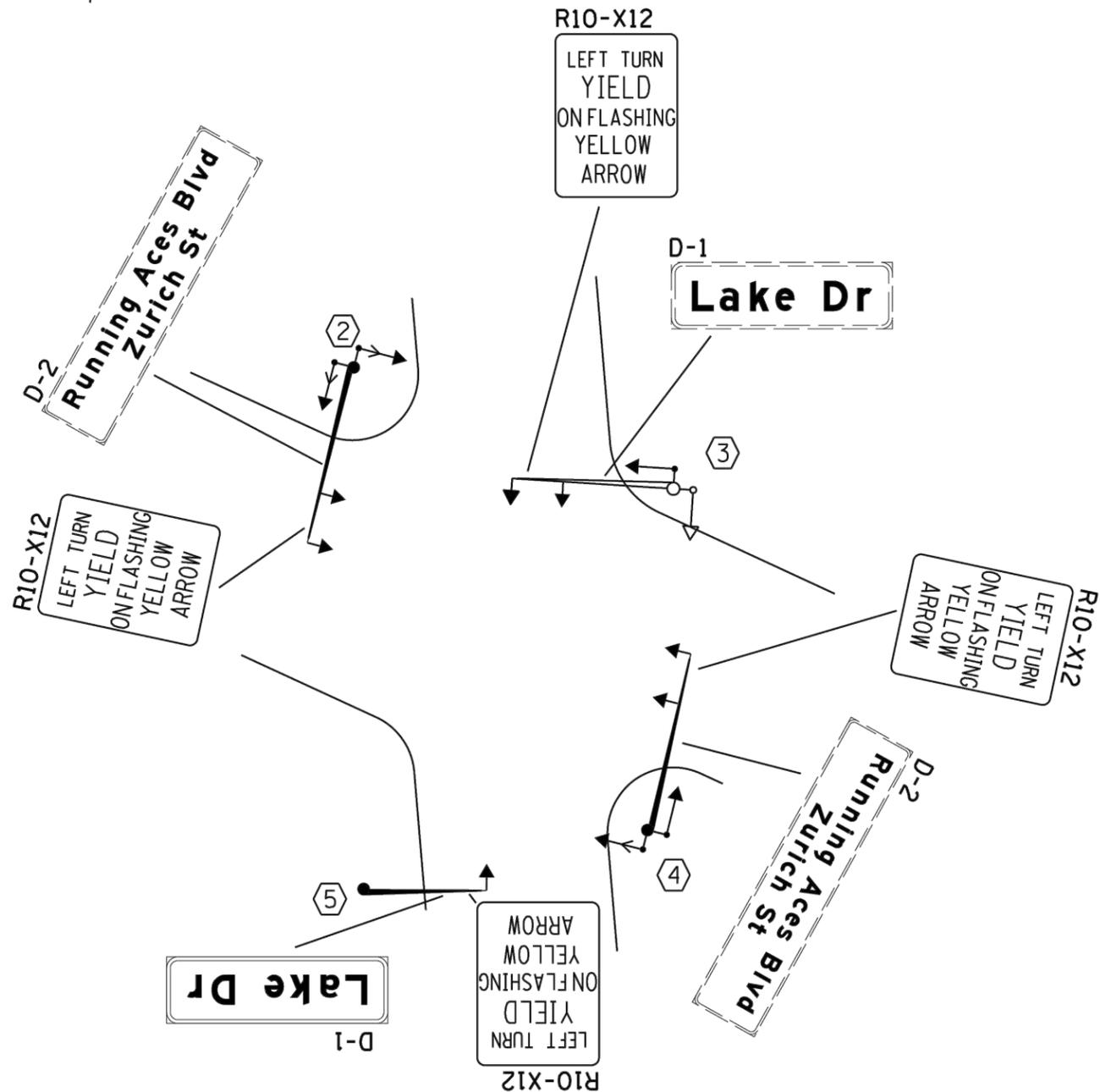
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SIGN DETAILS

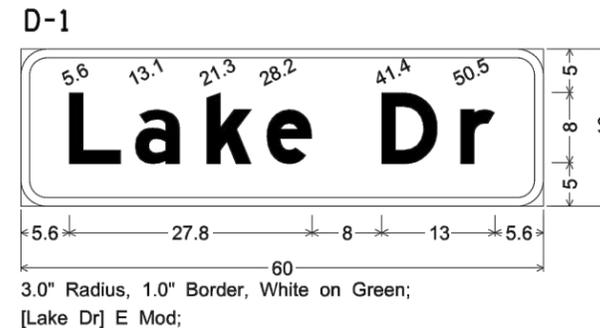
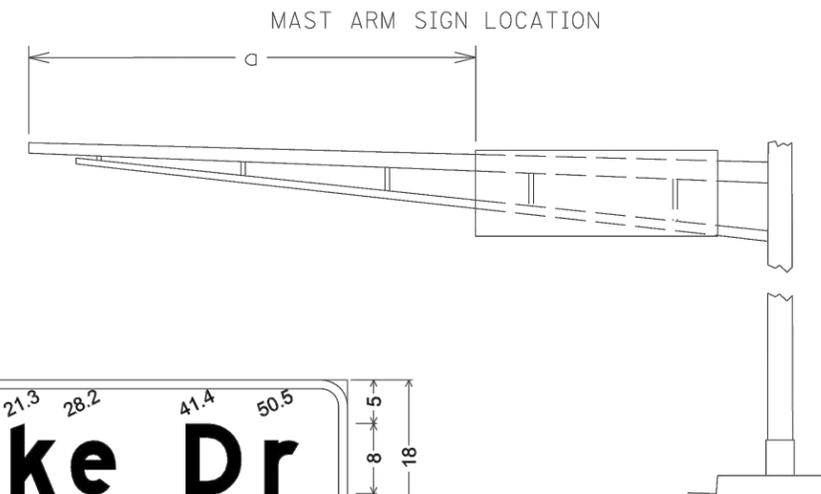
MAST ARM MOUNTED SIGNS							
SIGN NO	POLE NO	a	PANEL		MOUNTING STIFFENERS		PANEL LEGEND
			SIZE	AREA	NUMBER	SPACING (1)	
		FEET	INCH	SQ FT			
D-1	1	8	60 x 18	7.50	3	30	LAKE DR
(2) D-1	3	-	-	-	-	-	LAKE DR
(3) D-2	2	16	-	-	3	30	RUNNING ACES BLVD ZURICH ST
(3) D-2	4	16	-	-	3	30	RUNNING ACES BLVD ZURICH ST
R10-X12	1	1.5	36 x 42	10.50	2	30	LEFT TURN YIELD ON FLASHING ARROW
R10-X12	2	1.5	36 x 42	10.50	2	24	LEFT TURN YIELD ON FLASHING ARROW
R10-X12	3	1.5	36 x 42	10.50	2	24	LEFT TURN YIELD ON FLASHING ARROW
R10-X12	4	1.5	36 x 42	10.50	2	24	LEFT TURN YIELD ON FLASHING ARROW

SPECIFIC NOTES:

- (1) SPACING BETWEEN STIFFENERS SHALL NOT EXCEED 36 INCHES AND SHALL BE UNIFORMLY SPACED. SEE MNDOT STANDARD SIGNS AND MARKINGS MANUAL, PAGE 105A FOR STIFFENER SPACING REQUIREMENTS.
- (2) SIGN INPLACE
- (3) SIGN SALVAGED AND INSTALLED

GENERAL NOTES:

- 1. FOR STRUCTURAL DETAILS OF MAST ARM MOUNTED SIGNS SEE MNDOT STANDARD SIGNS AND MARKINGS MANUAL, PAGE 105A.
- 2. FOR TYPE D STRINGER AND PANEL JOINT DETAILS SEE MNDOT STANDARD SIGNS AND MARKINGS MANUAL, PAGE 105.
- 3. THE MAST ARM MOUNTED SIGNS ARE INCLUDED IN THE TRAFFIC CONTROL SIGNAL SYSTEM PAY ITEM.



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COLUMBUS, MINNESOTA
2020 ZURICH STREET EXTENSION
SIGNAL PLAN

SHEET 34
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NMC LOOP DETECTORS			
DESIGNATION	NO. & SIZE/FT.	LOCATION	FUNCTION
D1-1	2-5'X6'	20', 50'	(1)
D1-2	2-6'X6'	5', 35'	(1)
D2-1	1-6'X6'	475'	(1)
D5-1	1-6'X6'	475'	(1)
D8-1, D8-2	1-6'X6'	120', 120'	(3)
D8-3	2-5'X6', 1-6'X15'	5', 20', -30'	(7)
D8-4	2-6'X6'	5', 20'	(1)

-LOCATION: DISTANCE FROM CROSSWALK/STOP LINE IN FEET.

LOOP DETECTOR FUNCTIONS:
 (1) CALL AND EXTEND
 (3) EXTEND ONLY
 (7) DELAYED CALL-IMMEDIATE EXTEND

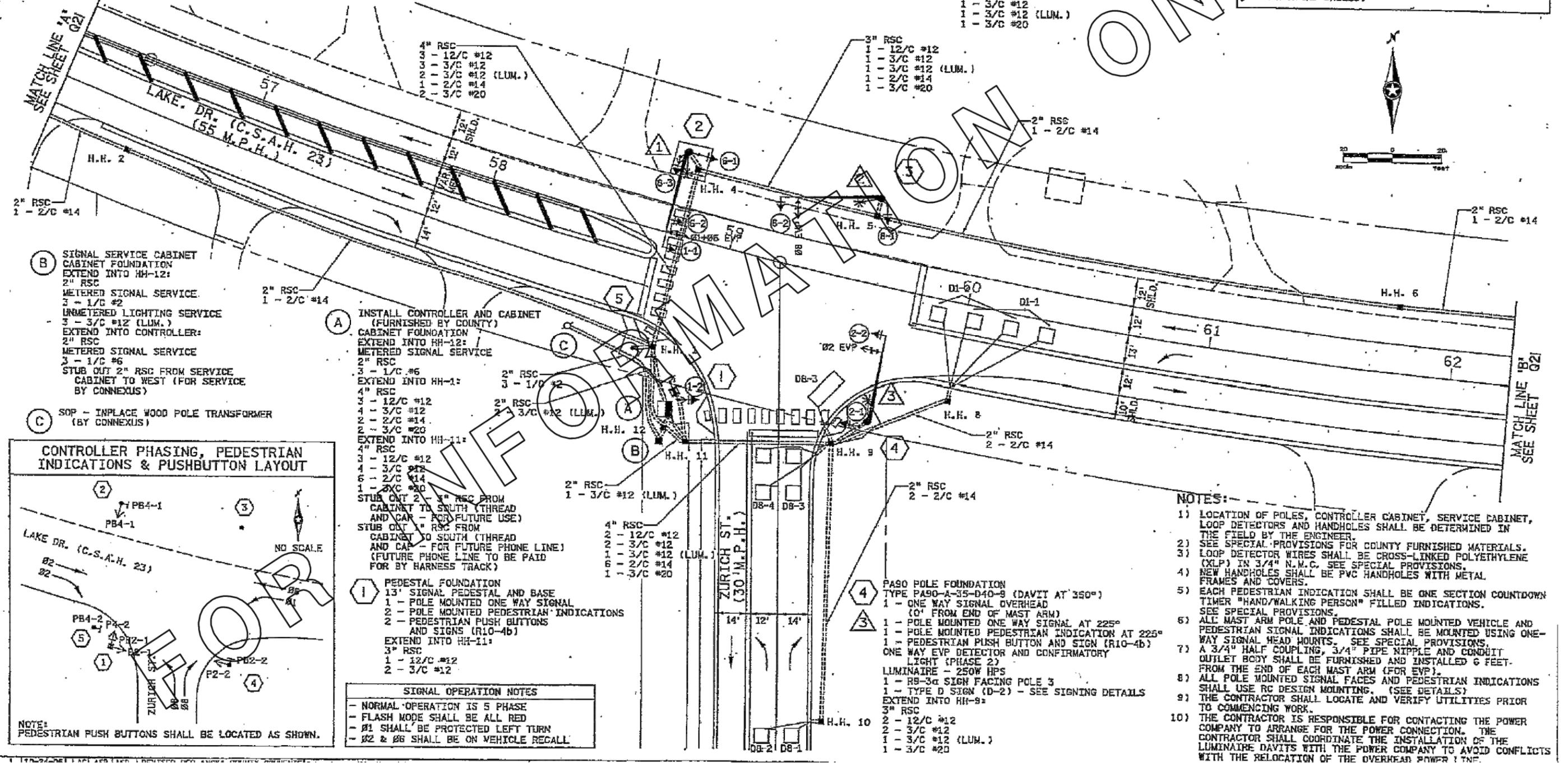
5 PED. PB. STATION FOUNDATION
 PED. PB. PEDESTAL AND BASE
 1 - PEDESTRIAN PUSH BUTTON AND SIGN (R10-4b)
 EXTEND INTO HH-1:
 3" RSC
 1 - 3/C #12

2 PA100 POLE FOUNDATION
 TYPE PA100-A-40-D40-9 (DAVIT AT 350°)
 2 - ONE WAY SIGNALS OVERHEAD (0' AND 12' FROM END OF MAST ARM)
 1 - POLE MOUNTED ONE WAY SIGNAL AT 225°
 1 - POLE MOUNTED PEDESTRIAN INDICATION AT 45°
 1 - PEDESTRIAN PUSH BUTTON AND SIGN (R10-4b)
 ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASE 1+8)
 LUMINAIRE - 250W HPS
 1 - TYPE D SIGN (D-2) - SEE SIGNING DETAILS
 EXTEND INTO HH-4:
 3" RSC
 2 - 12/C #12
 2 - 3/C #12
 1 - 3/C #12 (LUM.)
 1 - 3/C #20

3 PA100 POLE FOUNDATION
 TYPE PA100-A-40-D40-9 (DAVIT AT 350°)
 1 - ONE WAY SIGNAL OVERHEAD (0' FROM END OF MAST ARM)
 2 - POLE MOUNTED ONE WAY SIGNAL AT 225°
 ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASE 8)
 LUMINAIRE - 250W HPS
 1 - R9-3a SIGN FACING POLE 4
 1 - TYPE D SIGN (D-1) - SEE SIGNING DETAILS
 EXTEND INTO HH-5:
 3" RSC
 1 - 12/C #12
 1 - 3/C #12
 1 - 3/C #12 (LUM.)
 1 - 3/C #20

SIGNAL FACE CHART						
FACE	R	Y	G	RTA	YTA	GTA
1-1, 1-2				←	←	←
2-1, 2-2	●	●	●			
6-1, 6-2	●	●	●			
8-1, 8-2, 8-3	●	●	●			

-ALL VEHICLE SIGNAL INDICATIONS SHALL BE 12".
 -ALL SIGNAL INDICATIONS SHALL BE LED.
 -ALL SIGNAL FACES SHALL HAVE A BACKGROUND SHIELD.

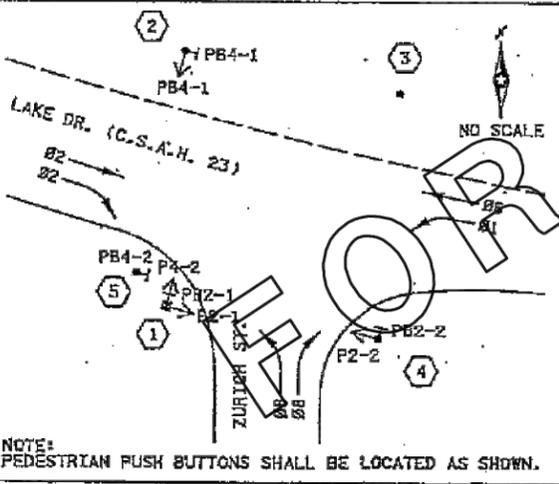


B SIGNAL SERVICE CABINET
 CABINET FOUNDATION
 EXTEND INTO HH-12:
 2" RSC
 METERED SIGNAL SERVICE
 3 - 1/C #2
 UNMETERED LIGHTING SERVICE
 3 - 3/C #12 (LUM.)
 EXTEND INTO CONTROLLER:
 2" RSC
 METERED SIGNAL SERVICE
 3 - 1/C #6
 STUB OUT 2" RSC FROM SERVICE CABINET TO WEST (FOR SERVICE BY CONNEXUS)

A INSTALL CONTROLLER AND CABINET (FURNISHED BY COUNTY)
 CABINET FOUNDATION
 EXTEND INTO HH-12:
 METERED SIGNAL SERVICE
 2" RSC
 3 - 1/C #6
 EXTEND INTO HH-1:
 4" RSC
 3 - 12/C #12
 4 - 3/C #12
 2 - 2/C #14
 2 - 3/C #20
 EXTEND INTO HH-11:
 4" RSC
 3 - 12/C #12
 4 - 3/C #12
 6 - 2/C #14
 1 - 3/C #20
 STUB OUT 2" RSC FROM CABINET TO SOUTH (THREAD AND CAP - FOR FUTURE USE)
 STUB OUT 1" RSC FROM CABINET TO SOUTH (THREAD AND CAP - FOR FUTURE PHONE LINE) (FUTURE PHONE LINE TO BE PAID FOR BY HARNESS TRACK)

C SOP - INPLACE WOOD POLE TRANSFORMER (BY CONNEXUS)

CONTROLLER PHASING, PEDESTRIAN INDICATIONS & PUSHBUTTON LAYOUT



1 PEDESTAL FOUNDATION
 13' SIGNAL PEDESTAL AND BASE
 1 - POLE MOUNTED ONE WAY SIGNAL
 2 - POLE MOUNTED PEDESTRIAN INDICATIONS
 2 - PEDESTRIAN PUSH BUTTONS AND SIGNS (R10-4b)
 EXTEND INTO HH-11:
 3" RSC
 1 - 12/C #12
 2 - 3/C #12

SIGNAL OPERATION NOTES
 - NORMAL OPERATION IS 5 PHASE
 - FLASH MODE SHALL BE ALL RED
 - #1 SHALL BE PROTECTED LEFT TURN
 - #2 & #6 SHALL BE ON VEHICLE RECALL

- NOTES:**
- 1) LOCATION OF POLES, CONTROLLER CABINET, SERVICE CABINET, LOOP DETECTORS AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
 - 2) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
 - 3) LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLPE) IN 3/4" N.M.C. SEE SPECIAL PROVISIONS.
 - 4) NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS.
 - 5) EACH PEDESTRIAN INDICATION SHALL BE ONE SECTION COUNTDOWN TIMER "HAND/WALKING PERSON" FILLED INDICATIONS. SEE SPECIAL PROVISIONS.
 - 6) ALL MAST ARM POLE AND PEDESTAL POLE MOUNTED VEHICLE AND PEDESTRIAN SIGNAL INDICATIONS SHALL BE MOUNTED USING ONE-WAY SIGNAL HEAD MOUNTS. SEE SPECIAL PROVISIONS.
 - 7) A 3/4" HALF COUPLING, 3/4" PIPE NIPPLE AND CONDUIT OUTLET BODY SHALL BE FURNISHED AND INSTALLED 6 FEET FROM THE END OF EACH MAST ARM (FOR EVP).
 - 8) ALL POLE MOUNTED SIGNAL FACES AND PEDESTRIAN INDICATIONS SHALL USE RC DESIGN MOUNTING. (SEE DETAILS)
 - 9) THE CONTRACTOR SHALL LOCATE AND VERIFY UTILITIES PRIOR TO COMMENCING WORK.
 - 10) THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE POWER COMPANY TO ARRANGE FOR THE POWER CONNECTION. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE LUMINAIRE DAVITS WITH THE POWER COMPANY TO AVOID CONFLICTS WITH THE RELOCATION OF THE OVERHEAD POWER LINE.

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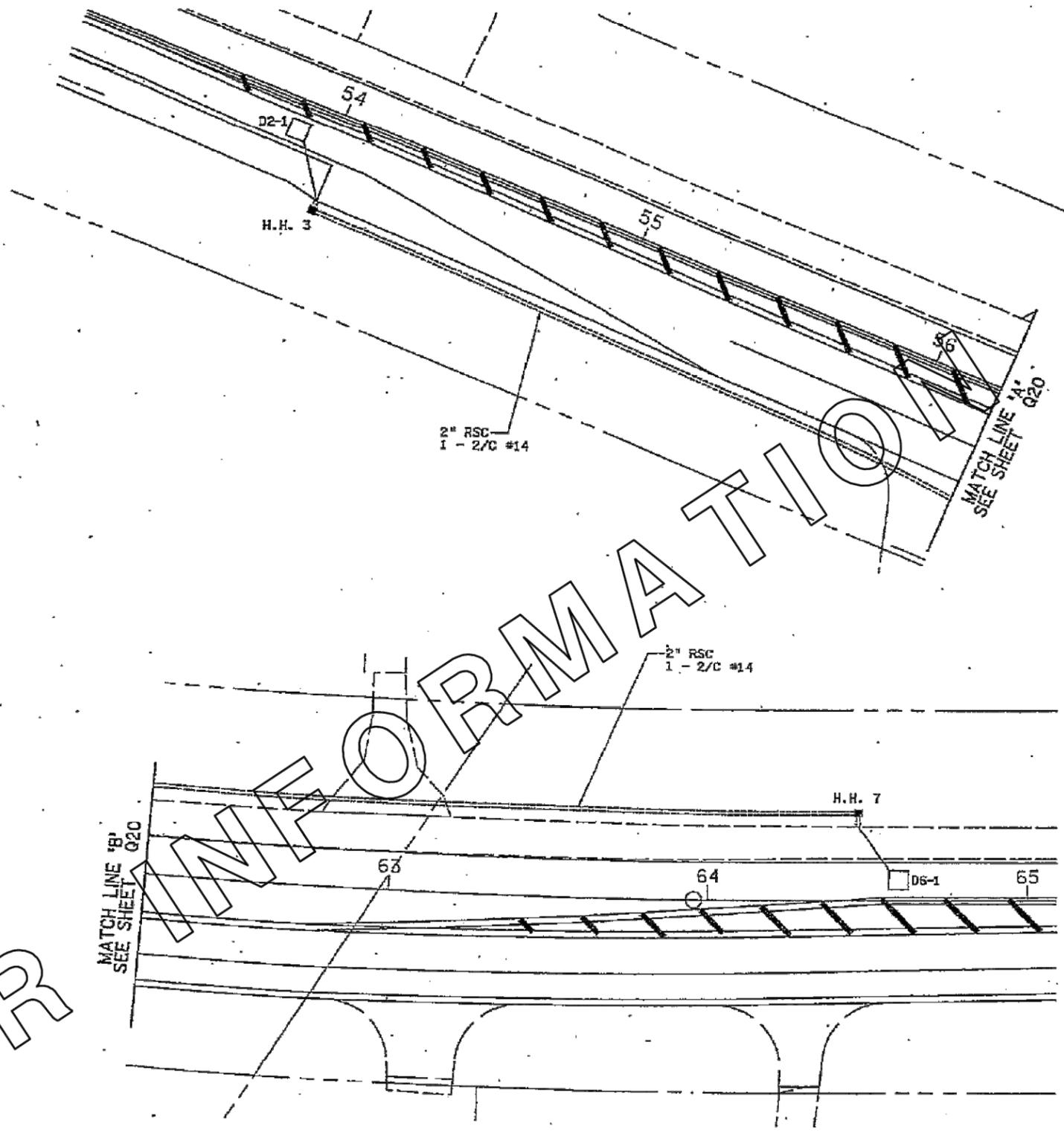
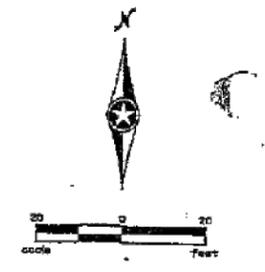
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COLUMBUS, MINNESOTA
 2020 ZURICH STREET EXTENSION
 SIGNAL PLAN

SHEET
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FOR INFORMATION ONLY



NOTES:

- 1) LOCATION OF LOOP DETECTORS AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
- 2) LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 3/4" N.W.C. SEE SPECIAL PROVISIONS.
- 3) NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS.

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SIGNAL PLAN	