PLAN SYMBOLS

COUNTY LINE
TOWNSHIP OR RANGE LINE
SECTION LINE
QUARTER LINE
SIXTEENTH LINE
RIGHT OF WAY LINE
SLOPE EASEMENT
EXISTING RIGHT OF WAY
PROPERTY LINE
CORPORATE OR CITY LIMITS
RETAINING WALL
RAILROAD
RAILROAD RIGHT OF WAY
RIVER OR CREEK
DRAINAGE DITCH
CULVERT
DROP INLET
GUARD RAIL
BARBED WIRE FENCE
WOVEN WIRE FENCE
CHAIN LINK FENCE
WOOD FENCE
STONE WALL OR FENCE
HEDGE
LOWLAND
TIMBER
ORCHARD
BRUSH
NURSERY
CATTLE GUARD
OVERPASS (Highway Over)
UNDERPASS (Highway Under)
BRIDGE
BUILDING (One Story Frame) 1-S-F
F-FRAME C-CONCRETE
S-STONE T-TILE
B-BRICK ST-STUCCO
RAILROAD CROSSING BELL
RAILROAD CROSSING GATE
MANHOLE M.H.
CATCH BASIN C.B.
FIRE HYDRANT
CAST IRON MONUMENT
IRON PIN
GRAVEL PIT G
SAND PIT S
BORROW PIT B
ROCK QUARRY Q

UTILITY SYMBOLS

POWER POLE LINE
TELEPHONE OR TELEGRAPH POLE LINE
JOINT TELEPHONE & POWER ON POWER POLES
ON TELEPHONE POLES
ANCHOR
STEEL TOWER
STREET LIGHT
PEDESTAL (Cable Terminal)
GAS MAIN
WATERMAIN
TELEPHONE CABLE IN CONDUIT
ELECTRIC CABLE IN CONDUIT
TELEPHONE MANHOLE T
ELECTRIC MANHOLE P
BURIED TELEPHONE CABLE T-BUR
BURIED ELECTRIC CABLE P-BUR
OVERHEAD UTILITY CABLE OHU
SEWER (Sanitary or Storm)
SEWER MANHOLE

SCALES

PLAN 0' 100'
PROFILE HORIZONTAL 0' 100'
VERTICAL 0' 10'
X-SECTIONS HORIZONTAL 0' 10'
VERTICAL 0' 10'
INDEX MAP 0' 1500'

MINNESOTA DEPARTMENT OF TRANSPORTATION

ANOKA COUNTY

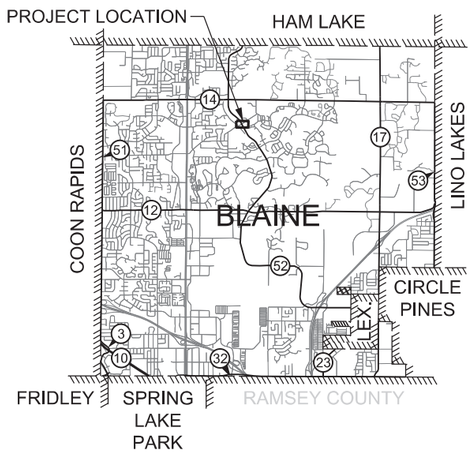
CONSTRUCTION PLAN FOR GRADING, AGGREGATE BASE, BITUMINOUS SURFACING, CURB AND GUTTER, SIGNAL CONSTRUCTION

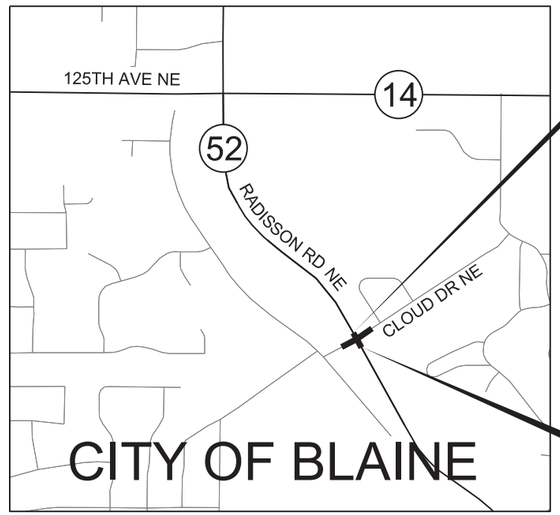
SAP 002-652-006 & 106-020-038 LOCATED AT CSAH 52 (RADISSON RD NE) AND CLOUD DR NE

STATE AID PROJ. NO. 002-652-006
106-020-038

CLOUD DR NE

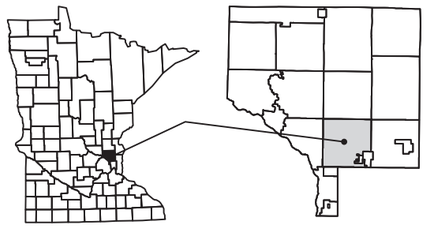
GROSS LENGTH	460.76	FEET	0.087	MILES
BRIDGES-LENGTH	0.00	FEET	0.000	MILES
EXCEPTIONS-LENGTH	0.00	FEET	0.000	MILES
NET LENGTH	460.76	FEET	0.087	MILES





END SAP 002-652-006
END SAP 106-020-038
STA. 204+30.83

BEGIN SAP 002-652-006
BEGIN SAP 106-020-038
STA. 202+37.45



PROJECT LOCATION

CITY OF BLAINE
ANOKA COUNTY
MNDOT TRANSPORTATION DISTRICT - METRO
SECTION 9
TOWNSHIP 31
RANGE 23

UTILITY QUALITY LEVEL NOTE:

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

DESIGN DESIGNATION (CLOUD DR NE)

ESAL 20	348,000
R VALUE	50
ADT (2023)	2,600
PROJ. ADT (2043)	3,550
PROJ. HCADT (2043)	140
SOIL FACTOR	NA

10 TON DESIGN

FUNCTIONAL CLASSIFICATION LOCAL STREET
NO. OF TRAFFIC LANES 2 NO. OF PARKING LANES 0
DESIGN SPEED 30 MPH
BASED ON STOPPING SIGHT DISTANCE:
HEIGHT OF EYE 3.5' HEIGHT OF OBJECT 2.0'
DESIGN SPEED NOT ACHIEVED AT:
STA. _____ TO STA. _____ MPH _____

GOVERNING SPECIFICATIONS

THE 2020 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" AND THE "SUPPLEMENTAL SPECIFICATIONS" DATED SEPTEMBER 2022 SHALL GOVERN

ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE LATEST FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.

INDEX

THIS PLAN CONTAINS 62 SHEETS

APPROVED Joseph MacPherson — Digitally signed by Joseph MacPherson Date: 2022.12.13 12:27:10 -06'00' — 12/13/2022
ANOKA COUNTY ENGINEER — DATE

APPROVED Daniel Schluender — 12.14.22
CITY OF BLAINE ENGINEER — DATE

Julie Dresel For — 12/14/2022
DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE WITH STATE AID RULES/POLICY — DATE

Julie Dresel For — 12/14/2022
STATE AID ENGINEER: APPROVED FOR STATE AID FUNDING — DATE

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\002-652-006 Cloud Drive Signal\Plan\002652006_Tsh1.dgn 12/09/2022 10:35:36 AM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: JORGE R BERNAL DELGADO
SIGNATURE:
DATE: 12-9-22 LICENSE NO. 57216

DRAWN BY APA DATE 12/09/22
DESIGN BY JRB DATE 12/09/22
CHECKED BY NJD DATE 12/09/22

ANOKA COUNTY HIGHWAY DEPT.

SAP 002-652-006
SAP 106-020-038

TITLE SHEET

Sheet 1 of 62 Sheets

STATEMENT OF ESTIMATED QUANTITIES

TAB /NOTE	Item Number	ITEM DESCRIPTION	Unit	TOTAL PROJECT QUANTITIES ESTIMATED	ANOKA COUNTY 002-652-006 ROADWAY QUANTITIES ESTIMATED	CITY OF BLAINE 106-020-038 ROADWAY QUANTITIES ESTIMATED
	2021.501	MOBILIZATION	LUMP SUM	1	0.374	0.626
A, [1]	2101.502	CLEARING	EACH	4	4	
A, [1]	2101.502	GRUBBING	EACH	4	4	
A, [1]	2101.505	CLEARING	ACRE	0.3	0.3	
A, [1]	2101.505	GRUBBING	ACRE	0.3	0.3	
	2104.502	REMOVE METAL APRON	EACH	1	1	
	2104.502	REMOVE SIGN TYPE C	EACH	11	4	7
[7]	2104.502	REMOVE SIGN TYPE SPECIAL	EACH	2		2
B, [1]	2104.503	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LIN FT	23	23	
B, [1]	2104.503	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LIN FT	1244	107	1137
B, [1]	2104.503	REMOVE CURB AND GUTTER	LIN FT	511	74	437
B, [1]	2104.504	REMOVE BITUMINOUS PAVEMENT	SQ YD	605	605	
B, [1]	2104.518	REMOVE CONCRETE WALK	SQ FT	265		265
B, [1]	2104.518	REMOVE CONCRETE MEDIAN	SQ FT	135		135
C	2105.607	SELECT GRANULAR BORROW (CV)	CU YD	243		243
AA	2106.507	EXCAVATION - COMMON	CU YD	342		342
C	2211.507	AGGREGATE BASE (CV) CLASS 5	CU YD	152	100	52
B, [1]	2232.504	MILL BITUMINOUS SURFACE (1.5")	SQ YD	2785	2055	730
E	2357.506	BITUMINOUS MATERIAL FOR TACK COAT	GALLON	174	119	55
E	2360.509	TYPE SP 12.5 BITUMINOUS MIXTURE FOR PATCHING	TON	87	87	
E	2360.509	TYPE SP 12.5 WEARING COURSE MIXTURE (4;C)	TON	299	192	107
G	2501.502	12" CS PIPE APRON	EACH	1	1	
G	2501.503	12" CS PIPE CULVERT	LIN FT	8	8	
F	2511.509	RANDOM RIPRAP CLASS II	TON	8	8	
D	2521.518	6" CONCRETE WALK	SQ FT	1490	373	1117
D	2521.602	DRILL AND GROUT REINF BAR (EPOXY COATED)	EACH	80	20	60
D	2531.503	CONCRETE CURB AND GUTTER DESIGN B412 (MODIFIED)	LIN FT	350	350	
D	2531.503	CONCRETE CURB AND GUTTER DESIGN B418	LIN FT	402	201	201
D	2531.503	CONCRETE CURB AND GUTTER DESIGN B618	LIN FT	270		270
D	2531.503	CONCRETE CURB DESIGN V6	LIN FT	34		34
D	2531.504	CONCRETE MEDIAN	SQ YD	52	10	42
D	2531.602	CONCRETE MEDIAN NOSE-SPECIAL	EACH	4	2	2
D	2531.604	CONCRETE DRAINAGE FLUME	SQ YD	8	8	
	2531.618	TRUNCATED DOMES	SQ FT	99	99	
[3]	2545.502	SERVICE CABINET	EACH	1	0.25	0.75
	2563.601	TRAFFIC CONTROL SUPERVISOR	LUMP SUM	1	0.374	0.626
[2]	2563.601	TRAFFIC CONTROL	LUMP SUM	1	0.374	0.626
	2563.613	PORTABLE CHANGEABLE MESSAGE SIGN	UNIT DAY	48	48	
	2564.618	SIGN TYPE C	SQ FT	97.50	65.00	32.50
[3]	2565.501	EMERGENCY VEHICLE PREEMPTION SYSTEM	LUMP SUM	1		1
[3]	2565.501	TRAFFIC CONTROL INTERCONNECT	LUMP SUM	1	1	
[3]	2565.516	TRAFFIC CONTROL SIGNAL SYSTEM	SYSTEM	1	0.25	0.75
[4]	2565.602	ADJUST HANDHOLE	EACH	1	1	
	2573.501	EROSION CONTROL SUPERVISOR	LUMP SUM	1	1	
F	2573.503	SEDIMENT CONTROL LOG TYPE WOOD FIBER	LIN FT	675	675	
F	2574.507	COMMON TOPSOIL BORROW	CU YD	119	119	
F	2574.508	FERTILIZER TYPE 3	POUND	56	56	
F	2575.505	SEEDING	ACRE	0.16	0.16	
F	2575.508	SEED MIXTURE 25-121	POUND	9	9	
F	2575.508	HYDRAULIC REINFORCED FIBER MATRIX	POUND	624	624	
[6]	2581.503	REMOVABLE PREFORMED PAVEMENT MARKING TAPE	LIN FT	4260	4260	
[5]	2582.503	4" SOLID LINE MULTI-COMPONENT	LIN FT	950	700	250
	2582.503	4" DOUBLE SOLID LINE MULTI-COMPONENT	LIN FT	150	0	150
	2582.518	PAVEMENT MESSAGE PREFORM THERMOPLASTIC	SQ FT	246	124	122
	2582.518	CROSSWALK PREFORM THERMOPLASTIC	SQ FT	918	612	306
	2582.603	PAVEMENT MARKING SPECIAL	LIN FT	146	98	48

GENERAL NOTES:

[1] SEE REMOVAL PLAN SHEET 32
[2] SEE CONSTRUCTION STAGING PLAN SHEETS 29-30
[3] SEE TRAFFIC SIGNAL PLAN SHEETS 55-65
[4] THIS ITEM COVERS ANY MISCLENEOUS HANDHOLES OUTSIDE OF TRAFFIC CONTORL SIGNAL SYSTEM PAY ITEM.
[5] INCLUDES 4" WHITE AND 4" YELLOW AND. SEE SIGNING AND STRIPING PLANS
[6] INCLUDES 4" WHITE, 4" YELLOW AND BLACK MASTIC. SEE TRAFFIC CONTROL PLANS
[7] CONTACT CITY OF BLAINE AND DELIVER TO CITY OF BLAINE PUBLIC WORKS

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\002-652-006 Cloud Drive Signal\Plan\002652006_TAB1.dgn 12/13/2022 1:03:01 PM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: JORGE R. BERNAL DELGADO
SIGNATURE:
DATE: 12-13-22 LICENSE NO. 57216

DRAWN BY APA DATE 12/09/22
DESIGN BY JRB DATE 12/09/22
CHECKED BY NJD DATE 12/09/22

ANOKA COUNTY
HIGHWAY DEPT.

SAP 002-652-006
SAP 106-020-038

STATEMENT OF ESTIMATED QUANTITIES

THE FOLLOWING STANDARD PLATES, APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION, SHALL APPLY ON THIS PROJECT	
STANDARD PLATES	
PLATE NO.	DESCRIPTION
7020K	CONCRETE CURB (DESIGN B, DESIGN V, DESIGN S, DESIGN DR AND DESIGN BR)(2 SHEETS)
7038A	DETECTABLE WARNING SURFACE TRUNCATED DOMES
7100H	CONCRETE CURB AND GUTTER (DESIGN B AND DESIGN V)
7113A	CONCRETE APPROACH NOSE DETAIL
8000K	TEMPORARY CHANNELIZERS (3 SHEETS)
8120Q	POLE FOUNDATION (PA85)
8126L	POLE FOUNDATION (PA90 AND PA100)

SEE SHEET 50 FOR ADDITIONAL STANDARD PLATES

INDEX OF TABULATION CHARTS

BASIS OF QUANTITIES

SPEC NO	DESCRIPTION	RATE
2357.502	BITUMINOUS MATERIAL FOR TACK COAT	0.05 GAL / SQ YD / LIFT
2360.501	TYPE SP12.5 WEARING COURSE MIXTURE	115 LBS / SQ YD / IN
2360.502	TYPE SP12.5 NON-WEARING COURSE MIXTURE	115 LBS / SQ YD / IN
2574.508	FERTILIZER TYPE 3	350 LBS / ACRE
2575.508	SEED MIXTURE 25-121	61 LBS / ACRE
2575.508	HYDRAULIC REINFORCED FIBER MATRIX	3900 LBS / ACRE

EARTHWORK SUMMARY — AA

ALIGNMENT	STATION	TO	STATION	2106 Common Excavation CU YD	NOTES
CLE_1	101+51	-	103+30	164	
CLE_1	104+12	-	106+12	178	
PROJECT TOTAL				342	

CLEARING & GRUBBING SPEC (2101) — A

ALIGNMENT	STATION	OFFSET LEFT	OFFSET RIGHT	CLEARING (TREE)	GRUBBING (TREE)	CLEARING (ACRE)	GRUBBING (ACRE)	NOTES
CLE_1	101+92.25		30.61	1	1			
CLE_1	102+20.07		33.19	1	1			
CLE_1	102+50.14		31.54			0.1	0.1	
CLE_1	102+72.72	31.61				0.1	0.1	
CLE_1	104+51.90	35.48		1	1			
CLE_1	104+52.06	41.29				0.1	0.1	
CLE_1	104+94.21	31.6		1	1			
PROJECT TOTAL				4	4	0.3	0.3	

CLEARING & GRUBBING GENERAL NOTES:

TREES WITHIN THE CONSTRUCTION LIMITS WILL BE DESIGNATED FOR REMOVAL BY THE ENGINEER.
REMOVAL OF MISCELLANEOUS SHRUBS AND LANDSCAPING SHALL BE CONSIDERED INCIDENTAL

UTILITY OWNERS — BB

ANOKA COUNTY SIGNALS
1440 BUNKER LAKE BLVD NW
ANDOVER, MN 55304
CONTACT MARK LEKSON
SIGNALS - CONSTRUCTION
TEL 763-324-3139

SPRING LAKE PARK SCHOOL DISTRICT (ARVIG)
CONTACT CURTIS OLSON
TEL: 320-256-0251

CENTURYLINK
TERRATECH LLC.
CONTACT CHARLES DAHER
TEL: 612-298-2825

CENTERPOINT ENERGY
700 WEST LINDEN AVE
PO BOX 1165
MINNEAPOLIS, MN 55440-1165
CONTACT NICK LARSON
TEL: 612-321-5336

CITY OF BLAINE
10801 TOWN SQUARE DRIVE NE
BLAINE, MN 55449
CONTACT DAN SCHLUENDER
CITY ENGINEER
TEL: 763-785-6158

COMCAST
4255 LEXINGTON AVE STE 100
ARDEN HILLS, MN 55126
CONTACT LUKE BASTIL
TEL: 651-493-5405

CONNEXUS ENERGY
14601 RAMSEY BLVD NW
RAMSEY, MN
CONTACT MAT RAUSCHENDORFER
TEL: 763-218-4655

XCEL ENERGY GAS
5363 260TH ST N
WYOMING, MN 55303
CONTACT TRAVIS DENZEL
TEL: 651-229-2268

ZAYO BANDWITH
TERRATECH LLC.
CONTACT JASON OVERCAMP
TEL: 651-788-5890

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\002-652-006 Cloud Drive Signal\Plan\002652006_TAB1.dgn 12/09/2022 10:30:10 AM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: JORGE R. BERNAL DELGADO
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CHECKED BY NJD DATE 12/09/22

ANOKA COUNTY HIGHWAY DEPT.

SAP 002-652-006
SAP 106-020-038

STANDARD PLATES & BASIS OF QUANTITIES, INDEX TABS

REMOVALS, SAWING AND MILLING — B

ALIGNMENT	STATION	TO	STATION	REMOVE (SPEC. 2104)				SAWING (SPEC. 2104)		MILLING (SPEC. 2232)	NOTES
				BIT. PAVEMENT	CONC. MEDIAN	CONC. WALK	CONC. CURB & GUTTER	BIT. PAVEMENT	CONC. PAVEMENT	BIT. SURFACE (1.5")	
				(SQ YD)	(SQ FT)	(SQ FT)	(LIN FT)	(LIN FT)	(LIN FT)	(SQ YD)	
CLE_1	101+51	-	103+30	330				513		488	
CLE_1	103+30	-	104+12	20	135		74	107	14	1567	
CLE_1	104+12	-	106+12	255		265	437	624	9	730	
PROJECT TOTAL				605	135	265	511	1244	23	2785	

AGGREGATE — C

ALIGNMENT	STATION	TO	STATION	AGGREGATE BASE (CV) CLASS 5	SELECT GRANULAR BORROW (CV)	NOTES
				CU YD	CU YD	
CLE_1	101+51	-	103+30	83	116	
CLE_1	104+12	-	106+12	69	127	
TOTAL				152	243	

CONCRETE — D

STATION BEGIN	STATION END	ALIGNMENT	OFFSET	CONCRETE CURB AND GUTTER DESIGN B618	CONCRETE CURB AND GUTTER DESIGN B418	CONCRETE CURB AND GUTTER DESIGN B412 (MODIFIED)	CONCRETE CURB DESIGN V6	6" CONCRETE WALK	DRILL AND GROUT REINF BAR (EPOXY COATED)	CONCRETE DRAINAGE FLUME	CONCRETE MEDIAN NOSE SPECIAL	CONCRETE MEDIAN
				LIN FT	LIN FT	LIN FT	LIN FT	SQ FT	EACH	SQ YD	EACH	SQ YD
101+51	103+30	CLE_1	LT	137	115			391	20	4		
101+51	103+30	CLE_1	RT	133	81			163	20	4		
103+60	103+81	CLE_1	LT			20					1	3
103+60	103+81	CLE_1	RT			30					1	5
104+12	106+12	CLE_1	LT		96			216	20			
104+12	106+12	CLE_1	RT		110	300	34	720	20		2	44
PROJECT TOTAL				270	402	350	34	1490	80	8	4	52

TURF ESTABLISHMENT AND EROSION CONTROL — F

LOCATION			SEDIMENT CONTROL LOG TYPE WOOD FIBER	COMMON TOPSOIL BORROW	SEEDING	SEED MIXTURE 25-121	HYDRAULIC REINFORCED FIBER MATRIX	FERTILIZER TYPE 3	RANDOM RIPRAP CLASS II
STATION	TO	STATION	LIN FT	CU YD	ACRE	POUND	POUND	POUND	TON
101+51	-	103+30	462	89	0.12	7	468	42	8
104+12	-	106+12	213	30	0.04	2	156	14	
PROJECT TOTAL			675	119	0.16	9	624	56	8.0

CULVERT TABULATION — G

NOTE	STA	TO	STA	12" CS PIPE CULVERT	12" CS PIPE APRON
				LIN FT	EACH
(1)	104+41.70		104+43.24	8	1
PROJECT TOTAL				8	1

(1) CULVERT EXTENSION.

BITUMINOUS SUMMARY — E

ALIGNMENT	STATION	TO	STATION	BITUMINOUS			NOTES
				2360 TYPE SP 12.5 WEAR (4,C)	2360 BITUMINOUS PATCHING MIXTURE	2357 BIT. TACK COAT	
				TON	TON	GALLON	
CLE_1	101+51	-	103+30	70	37	40	[1]
CLE_1	103+30	-	104+12	135	8	79	[1]
CLE_1	104+12	-	106+12	94	42	55	[1]
PROJECT TOTAL				299	87	174	

BITUMINOUS SUMMARY NOTES:
[1] BITUMINOUS PATCHING MIXTURE FOR AROUND CURB REMOVAL AREAS TO BE PATCHED TO BASE LIFT

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\002-652-006 Cloud Drive Signal\Plan\002652006_TAB1.dgn 12/09/2022 10:30:13 AM

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ANOKA COUNTY
ANOKA COUNTY HIGHWAY DEPT.

SAP 002-652-006
SAP 106-020-038

TABULATIONS

Sheet 4 of 62 Sheets

1. TOP OF THE GRADING SUBGRADE (GRADING GRADE) IS DEFINED AS THE BOTTOM OF THE CLASS 5 AGGREGATE BASE LAYER.

2. BOTTOM OF THE SUBBASE GRADE SHALL BE DEFINED AS THE BOTTOM OF THE 1' SUBGRADE EXCAVATION (SEE CROSS-SECTIONS FOR DETAILS).

3. CONSTRUCT EMBANKMENTS IN ACCORDANCE WITH SPECIFICATION 2106 AND THE MnDOT ROAD DESIGN MANUAL. ALL EMBANKMENT CORE-WIDENING MATERIAL SHALL BE SELECT GRADING MATERIAL OR COMMON EMBANKMENT (CV) IN ACCORDANCE WITH OTHER REQUIREMENTS PROVIDED IN SPEC. 2106.

4. SELECT GRANULAR MATERIAL SHALL MEET THE REQUIREMENTS OF MnDOT SPEC. 3149.2B2.

5. ALL TOPSOIL STRIPPING WILL BE CONSIDERED TO BE A PART OF EXCAVATION - COMMON. TOPSOIL SHALL BE DEFINED AS EXISTING SOILS WHICH MEET MnDOT SPEC. 3877 THAT WOULD BE SUITABLE FOR REUSE. STRIP ALL TOPSOIL AND INPLACE SLOPE DRESSING WHERE PRESENT IN AREAS TO BE DISTURBED BY CONSTRUCTION AND REUSE AS SLOPE DRESSING. FOR ESTIMATING PURPOSES, THE DEPTH OF TOPSOIL AVAILABLE IS CONSIDERED TO BE 4 INCHES. CONTRACTOR SHALL VERIFY PRIOR TO PLACING BID.

6. SUITABLE GRADING MATERIAL SHALL BE USED TO BACK FILL THE EMBANKMENT UNDER THE NEW ROADWAY CORE, UP TO THE BOTTOM OF THE GRADING SUBGRADE.

7. SLOPE DRESSING ON THE PROJECT IS DEFINED AS THE TOPSOIL OR OTHER SOIL PLACED DURING PREVIOUS CONSTRUCTION TO PROVIDE A MEDIUM FOR ESTABLISHING TURF.

8. UNSUITABLE SOILS ARE DEFINED AS SOILS WHICH DO NOT MEET OR ARE NOT MANUFACTURED TO MEET ANY OF THE ABOVE DEFINED CATEGORIES, AND ARE THEREFORE NOT REUSABLE AS STRUCTURAL BACKFILL OR EMBANKMENT WITHIN THE ROADWAY CORE.

9. SUITABLE GRADING MATERIAL OBTAINED FROM COMMON EXCAVATION NOT MEETING THE REQUIREMENTS OF MnDOT SPEC. 3149.2B1 SHALL BE USED OUTSIDE THE ROADWAY CORE ON THE PROJECT AS APPROVED BY THE ENGINEER.

10. UNSUITABLE MATERIALS ARE TOPSOIL, PAVEMENT OR CONCRETE DEBRIS, PEAT, MUCK AND ORGANIC OR OTHER UNSTABLE SOILS.

11. UNLESS OTHERWISE SPECIFICALLY ALLOWED OR REQUIRED BY THE CONTRACT, BITUMINOUS AND CONCRETE ITEMS DISTURBED BY CONSTRUCTION SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE RECYCLED TO THE EXTENT ALLOWED IN BASE AND SURFACING ITEMS OR DISPOSED OF OUTSIDE THE RIGHT OF WAY IN ACCORDANCE WITH SPEC. 2104.3C3.

13. WHERE CONNECTING TO THE INPLACE ROADWAYS AT THE TERMINI OF PROPOSED NEW CONSTRUCTION, CUT VERTICALLY TO THE BOTTOM OF THE INPLACE SURFACING OR TO THE BOTTOM OF THE NEW SURFACING DESIGN, WHICHEVER IS DEEPER, THEN AT A 1:20 TAPER TO THE BOTTOM OF THE RECOMMENDED SUBGRADE EXCAVATION.

14. WHERE MATCHING INTO INPLACE CROSSROADS, CUT VERTICALLY TO THE BOTTOM OF THE INPLACE SURFACING OR TO THE BOTTOM OF NEW SURFACING DESIGN, WHICHEVER IS DEEPER, THEN AT A 1:4 TAPER TO THE BOTTOM OF THE RECOMMENDED SUBGRADE EXCAVATION.

15. WHERE WIDENING ADJACENT TO EXISTING PAVEMENT, CUT VERTICALLY TO THE BOTTOM OF THE CLASS 5 AGGREGATE BASE AND THEN AT A 1V:1/2H SLOPE TO THE BOTTOM OF THE RECOMMENDED SUBGRADE EXCAVATION (AS SHOWN ON THE TYPICAL SECTIONS AND THE CROSS SECTIONS). BACKFILL PROMPTLY TO AVOID UNDERMINING THE EXISTING PAVEMENT.

16. CONTRACTOR SHALL PROVIDE A FULL DEPTH SAWCUT WHERE PLACING NEW PAVEMENT ADJACENT TO INPLACE PAVEMENT TO ENSURE A UNIFORM JOINT. IF NO ITEM FOR THIS WORK IS SPECIFICALLY CALLED OUT, THEN THE WORK SHALL BE INCIDENTAL WITH NO DIRECT COMPENSATION.

17. CONTRACTOR SHALL PROVIDE A UNIFORM BITUMINOUS TACK COAT BETWEEN ALL BITUMINOUS LAYERS AND PRIOR TO PLACING ANY BITUMINOUS MIXTURES ON EXISTING PAVEMENT IN ACCORDANCE WITH SPEC. 2357.

18. EMBANKMENT QUANTITIES SHOWN ON THE EARTHWORK TABULATION REPRESENT ALL EARTHWORK QUANTITIES BELOW THE PROPOSED GRADING GRADE OF ALL PERMANENT ROADWAYS AND TOPSOIL DRESSING. QUANTITIES REQUIRED ABOVE THE GRADING GRADE ARE PROVIDED IN DETAIL ON THE BITUMINOUS SUMMARY TAB.

19. THE CONSTRUCTION LIMITS AS SHOWN IN THE PLANS REPRESENT THE POINT OF INTERSECTION BETWEEN THE REQUIRED FILL OR CUT SLOPE AND THE EXISTING GROUND LINE AS DEPICTED ON THE CROSS SECTIONS. THE CONSTRUCTION LIMITS DO NOT INCLUDE AREAS REQUIRED FOR SLOPE ROUNDING.

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

21. ANY DEBRIS WHICH MAY BE ENCOUNTERED DURING GRADING SHALL BE DISPOSED OF BY THE CONTRACTOR OFF THE PROJECT RIGHT OF WAY IN A SUITABLE DISPOSAL AREA AS APPROVED BY THE ENGINEER.

22. UNSUITABLE SOILS NOT USED ON THE PROJECT SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE PROJECT AND DISPOSED OF IN ACCORDANCE WITH MnDOT SPECIFICATIONS.

23. INPLACE BITUMINOUS PAVEMENT RANGES FROM 4" TO 7" THICK. FOR INFORMATION ONLY, NO WARRANTY IS MADE OR IMPLIED WITH THIS INFORMATION. CONTRACTOR MAY VERIFY PAVEMENT DEPTH PRIOR TO PLACING BID.

24. COMPACTION OF AGGREGATE BASE SHOULD BE IN ACCORDANCE WITH MnDOT "MODIFIED PENETRATION INDEX METHOD." COMPACTION OF SELECT GRANULAR MATERIAL SHOULD BE IN ACCORDANCE WITH MnDOT "SPECIFIED DENSITY METHOD."

25. COMPACTION OF THE MAINLINE BASE, BINDER AND WEAR BITUMINOUS LIFTS SHALL BE BY THE "MAXIMUM DENSITY METHOD."

26. NO OVER-EXCAVATION WILL BE ALLOWED INSIDE THE COUNTY'S RIGHT OF WAY OR POND LOCATIONS FOR THIS PROJECT.

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\002-652-006 Cloud Drive Signal\Plan\002652006_TAB1.dgn 12/09/2022 10:30:16 AM

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

PRINT NAME: JORGE R. BERNAL DELGADO

SIGNATURE:

DATE: 12-9-22 LICENSE NO. 57216

DRAWN BY APA DATE 12/09/22

DESIGN BY JRB DATE 12/09/22

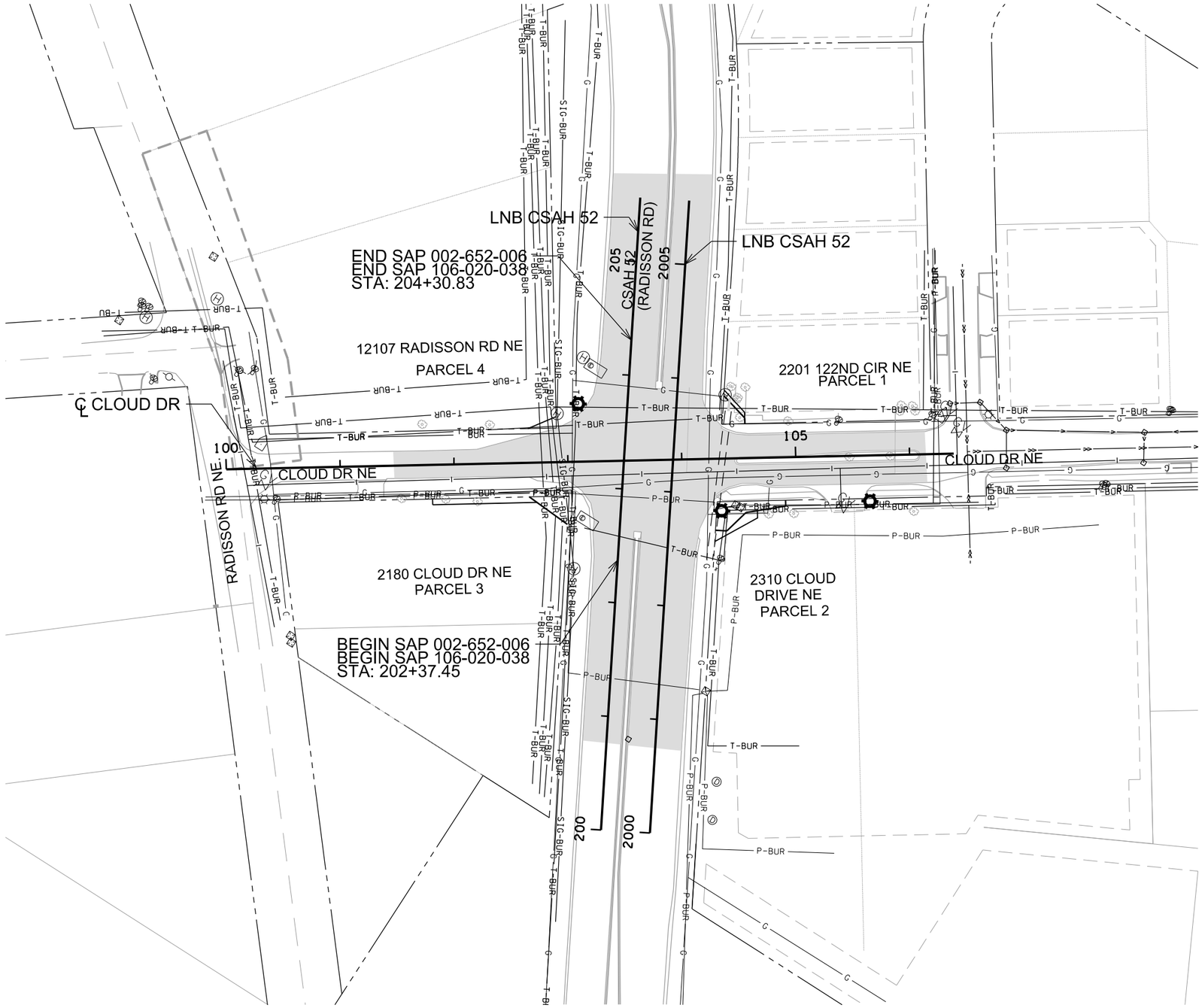
CHECKED BY NJD DATE 12/09/22

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

SAP 002-652-006
SAP 106-020-038

SOILS AND CONSTRUCTION NOTES



LEGEND

- TV-BUR — ACCESS/ COMCAST/ WINDSTREAM CABLE
- P-BUR — ANOKA/ CONNEXUS ENERGY
- G — CENTERPOINT ENERGY/ NORTHERN NATURAL GAS
- T-BUR — QWEST CORPORATION
- SIG-BUR — TRAFFIC SIGNAL
- EXISTING STORM SEWER
- EXISTING SAN SEWER
- EXISTING WATER MAIN
- PROPOSED STORM DRAIN
- EXISTING LIGHT POLE
- EXISTING R/W
- PROPOSED R/W
- PROPOSED EASEMENTS
- EXISTING ROADWAY

NO	DATE	BY	CKD	APPR	REVISION

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

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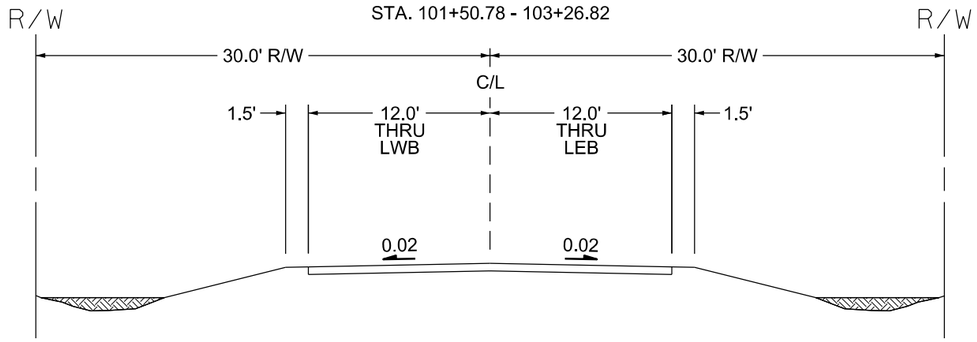
SAP 106-020-038

EXISTING UTILITY PLAN

Sheet 6 of 62 Sheets

CLOUD DR NE EXISTING

STA. 101+50.78 - 103+26.82



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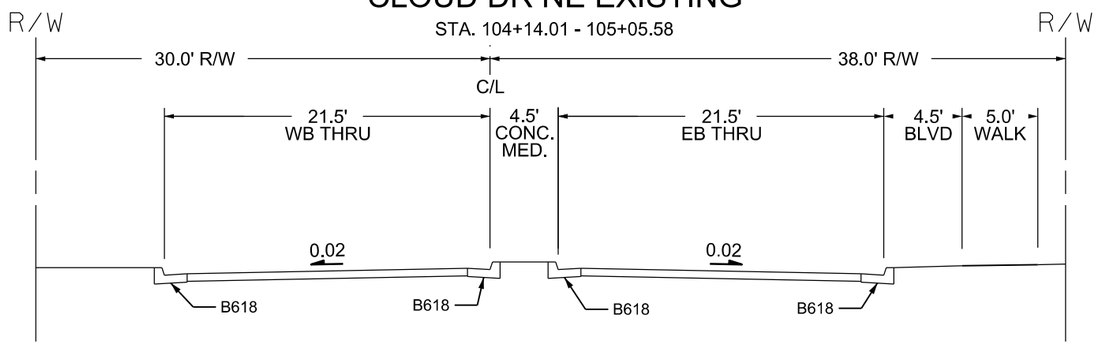

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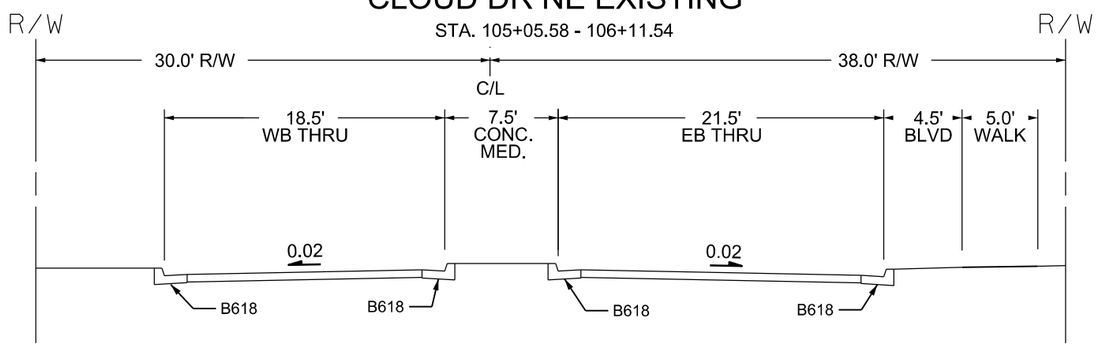

NO	DATE	BY	CKD	APPR	REVISION

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

PRINT NAME: JORGE R. BERNAL DELGADO

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ANOKA COUNTY

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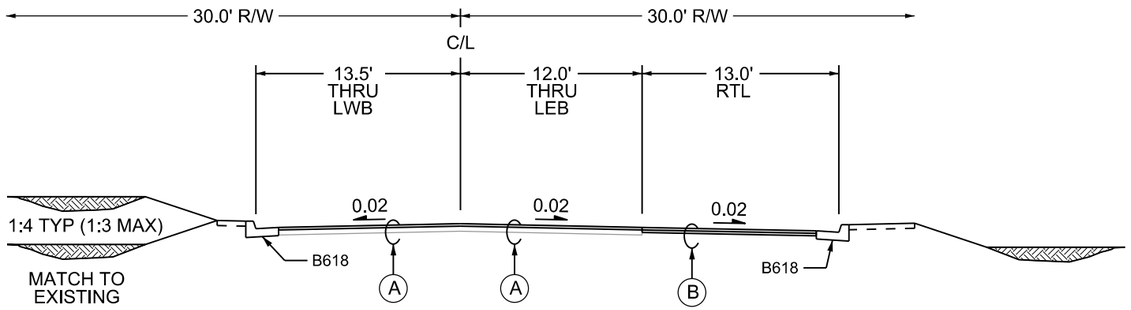
SAP 002-652-006
SAP 106-020-038

TYPICAL SECTIONS EXISTING

Sheet 7 of 62 Sheets

CLOUD DR NE PROPOSED

STA. 101+50.78 - 102+82.86



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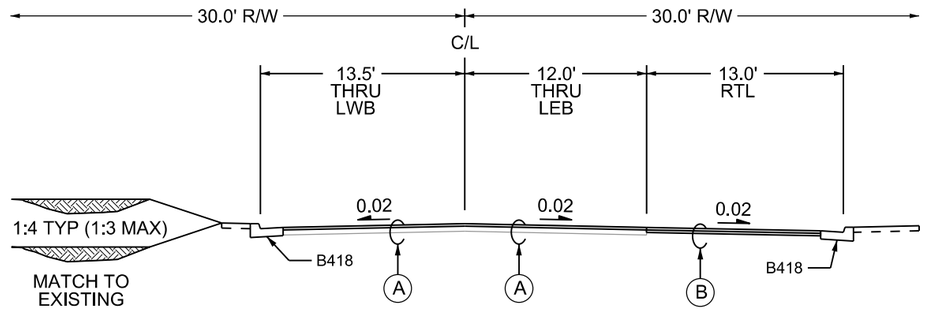

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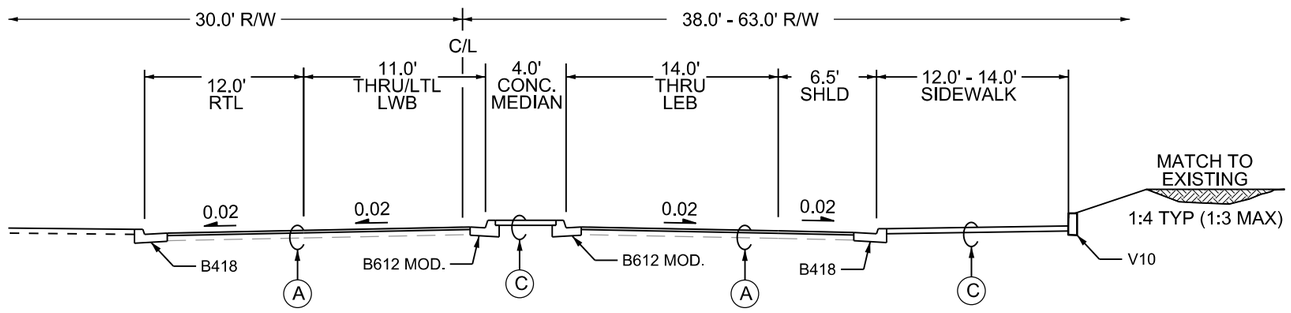

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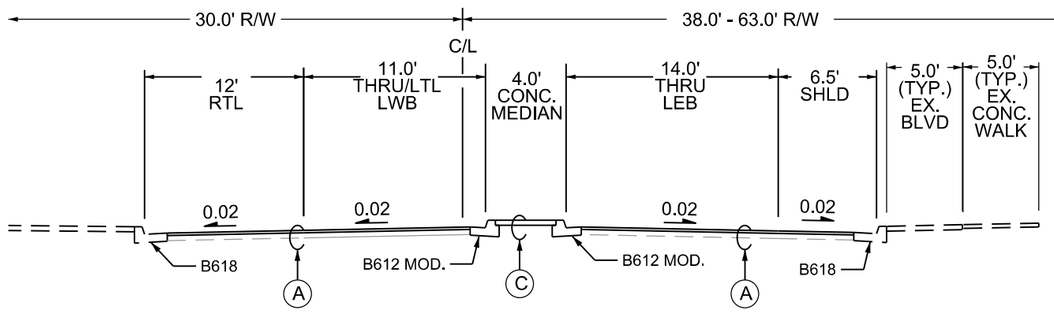

NO	DATE	BY	CKD	APPR	REVISION

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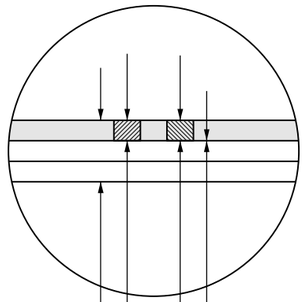
SAP 002-652-006
SAP 106-020-038

TYPICAL SECTIONS PROPOSED

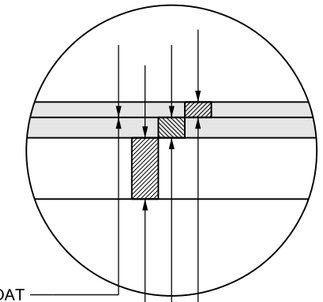
Sheet 8 of 62 Sheets

INSET "A"
1.5" MILL & OVERLAY



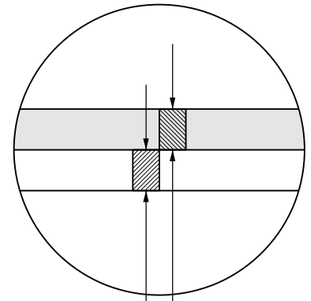
BITUMINOUS TACK COAT
1.5" BITUMINOUS MILL
1.5" TYPE SP 12.5 WEARING COURSE MIXTURE (SPWEB440C)
6.0" EXISTING BITUMINOUS

INSET "B"
CITY OF BLAINE
ROAD SECTION



BITUMINOUS TACK COAT
6.0" MIN. AGGREGATE BASE, CLASS 5 (MNDOT SPEC. 2211) ON SUITABLE GRADING MATERIAL
2.0" TYPE SP 12.5 WEARING COURSE MIXTURE (SPWEB440C)
1.5" TYPE SP 12.5 WEARING COURSE MIXTURE (SPWEB440C)

INSET "C"
CONCRETE WALK
OR MEDIAN



6.0" CONCRETE WALK
4.0" CONCRETE MEDIAN
4.0" MIN. AGGREGATE BASE, CLASS 5 (MNDOT SPEC. 2211) ON SUITABLE GRADING MATERIAL

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\002-652-006 Cloud Drive Signal\Plan\002652006_TYP1.dgn 12/09/2022 10:30:55 AM

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PRINT NAME: JORGE R. BERNAD DELGADO

SIGNATURE:

DATE: 12-9-22 LICENSE NO. 57216

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ANOKA COUNTY

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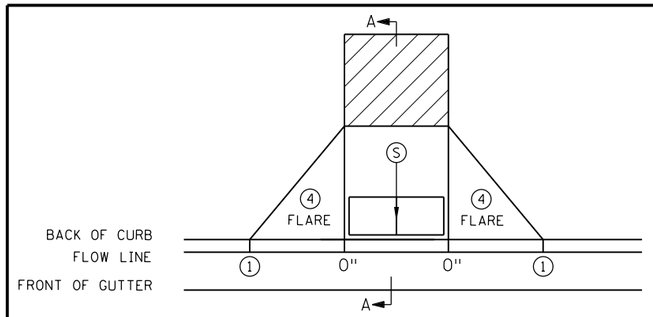
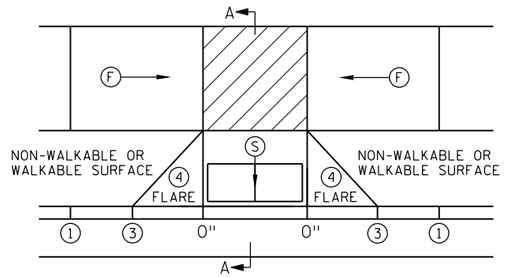
SAP 002-652-006
SAP 106-020-038

TYPICAL SECTIONS PROPOSED

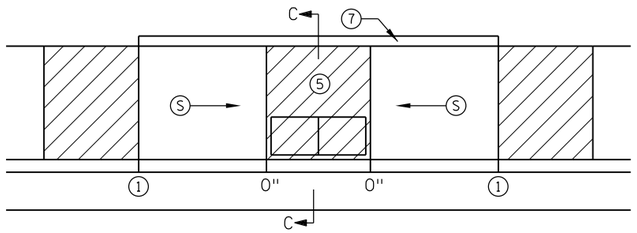
Sheet 9 of 62 Sheets



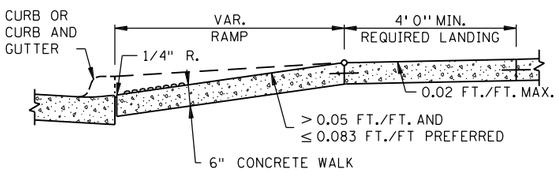
PERPENDICULAR



TIERED PERPENDICULAR

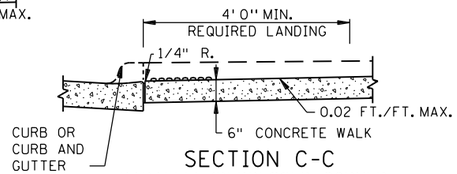


PARALLEL



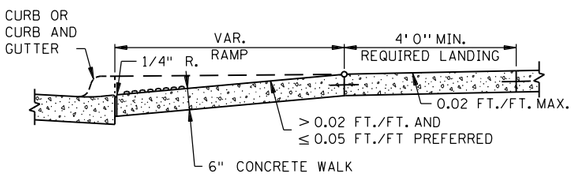
SECTION A-A

PERPENDICULAR/TIERED/DIAGONAL



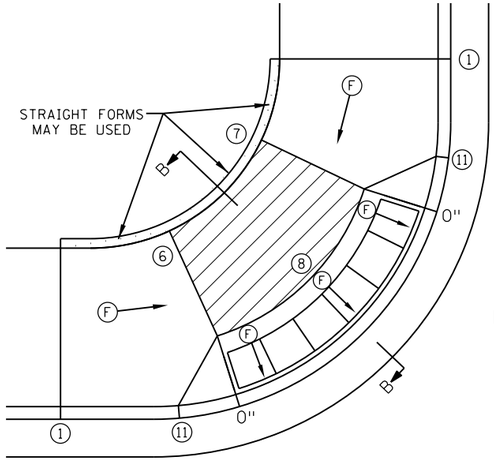
SECTION C-C

PARALLEL/DEPRESSED CORNER

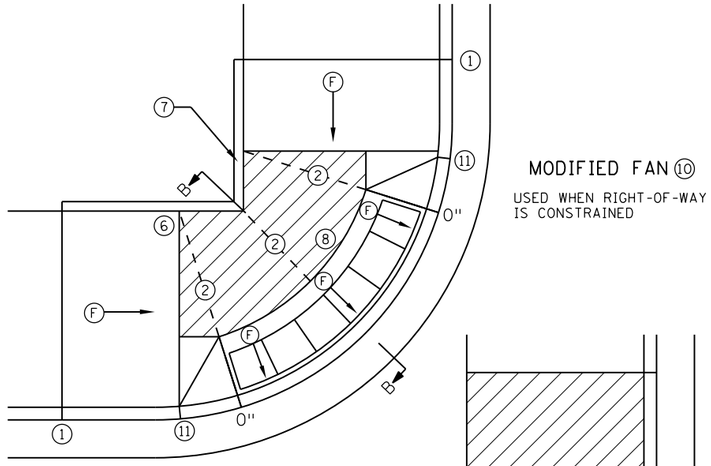


SECTION B-B

FAN

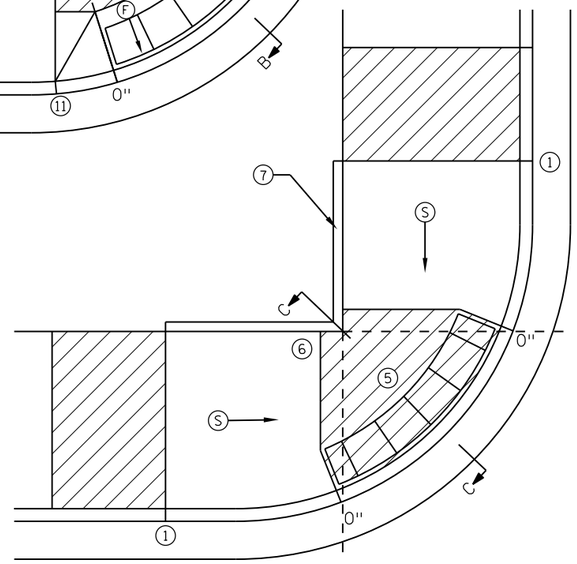


FAN (10)

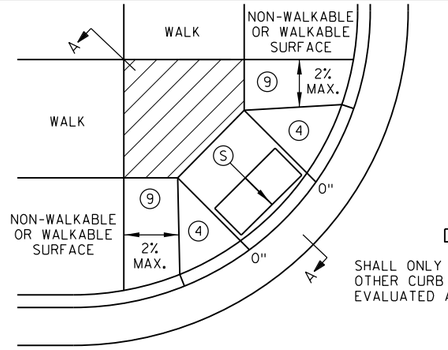


MODIFIED FAN (10)

USED WHEN RIGHT-OF-WAY
IS CONSTRAINED



DEPRESSED CORNER



DIAGONAL

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

NOTES:

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

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

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

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

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

TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, ALL INITIAL LANDINGS AT A TOP OF A RAMPED SURFACE (RUNNING SLOPE GREATER THAN 2%) SHALL BE FORMED AND PLACED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 6 OF 6 FOR ALL SEPARATELY POURED INITIAL LANDINGS.

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

MAINTAIN POSITIVE BOULEVARD DRAINAGE TO TOP OF CURB.

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

4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER THE ENTIRE PAR WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK WITH THE EXCEPTION OF 3" MAXIMUM ON EACH OUTSIDE EDGE WHICH ENSURES THE DETECTABLE WARNINGS ARE ENCASED IN CONCRETE WHEN ADJACENT TO TURF. WHEN ADJACENT TO CONCRETE FLARES 0" - 3" OFFSET IS ALLOWED.

WHEN DESIGNING OR ORDERING RECTANGULAR DETECTABLE WARNING SURFACES SHOULD BE 6" LESS THAN THE INCOMING PAR. ARC LENGTH OF THE RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.

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

(1) MATCH FULL HEIGHT CURB.

(2) 4' MINIMUM DEPTH LANDING REQUIRED ACROSS TOP OF RAMP.

(3) 3" HIGH CURB WHEN USING A 3' LONG RAMP, 4" HIGH CURB WHEN USING A 4' LONG RAMP.

(4) SEE SHEET 4 OF 6, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS.

(5) DETECTABLE WARNINGS MAY BE PART OF THE 4' X 4' MIN. LANDING AREA IF IT IS NOT FEASIBLE TO CONSTRUCT THE LANDING OUTSIDE OF THE DETECTABLE WARNING AREA.

(6) THE GRADE BREAK SHALL BE PERPENDICULAR TO THE BACK OF WALK. THIS WILL ENSURE THAT THE GRADE BREAK IS PERPENDICULAR TO THE DIRECTION OF TRAVEL. (TYPICAL FOR ALL)

(7) WHEN ADJACENT TO GRASS, GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS LESS THAN 5% RUNNING SLOPE SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.

(8) A 7' MIN TOP RADIUS GRADE BREAK IS REQUIRED TO BE CONSTRUCTIBLE.

(9) PAVE FULL WALK WIDTH.

(10) "S" SLOPES ON FANS SHALL ONLY BE USED WHEN ALL OTHER FEASIBLE OPTIONS HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL.

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

LEGEND

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

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

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

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

X" CURB HEIGHT

REVISION:

APPROVED: 11-04-2021

JEFFREY PERKINS
OPERATIONS DIVISION

MINNESOTA DEPARTMENT OF TRANSPORTATION

THOMAS STYRBICKI
STATE DESIGN ENGINEER

STANDARD PLAN 5-297.250 | **1 OF 6**

APPROVED: 11-04-2021
REVISED:

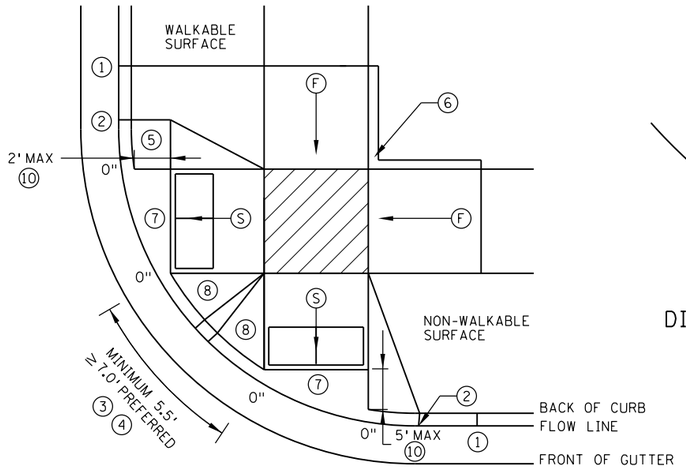
PEDESTRIAN CURB RAMP DETAILS

STATE PROJ. NO. SAP 002-652-006 (TH) SAP 106-020-038

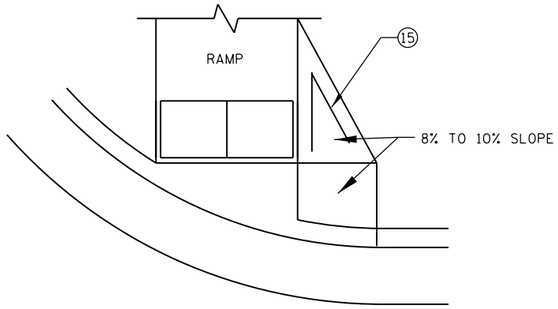
SHEET NO. 10 OF 62 SHEETS

PLOTTED/REVISED: 12/09/2022

DISTRICT #:
PLOT NAME: $$@PLOT$NAME@$$
PATH & FILENAME: P:\002-652-006 Cloud Drive Signal\Plan\002652006_STD1.dgn

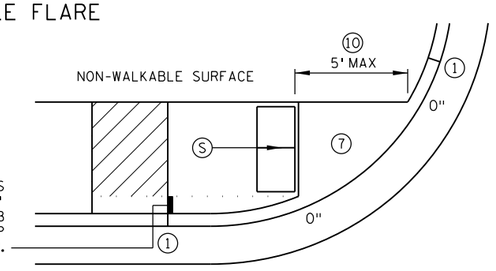


COMBINED DIRECTIONAL

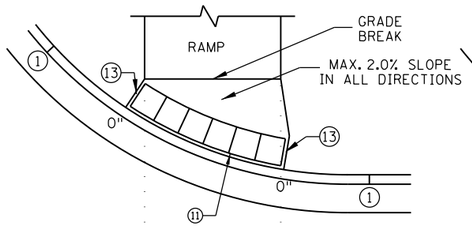


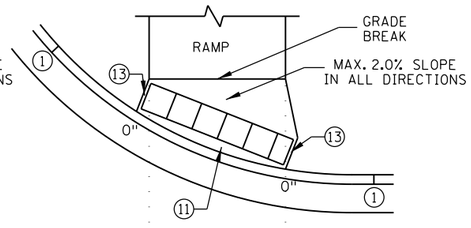
DIRECTIONAL RAMP WALKABLE FLARE

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



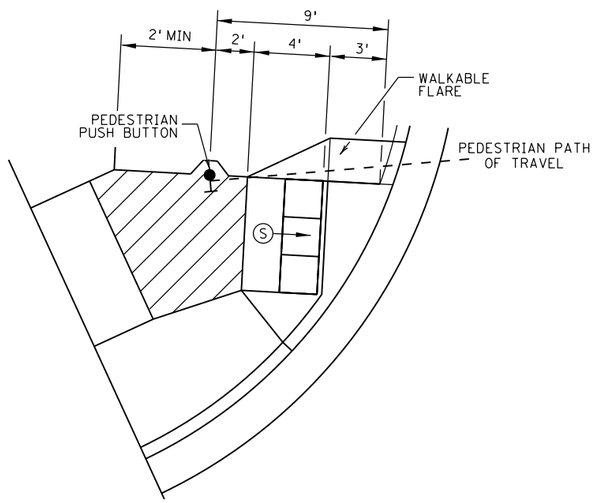
STANDARD ONE-WAY DIRECTIONAL ⑨





DETECTABLE WARNING PLACEMENT WHEN SETBACK CRITERIA IS EXCEEDED ⑫

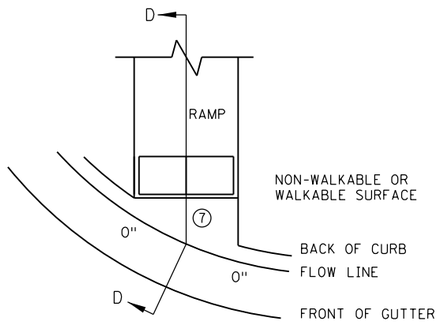
ONE-WAY DIRECTIONAL WITH DETECTABLE WARNING AT BACK OF CURB

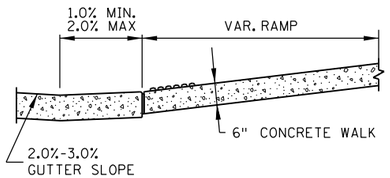


SEMI-DIRECTIONAL RAMP ③④⑨

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

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





SECTION D-D

CURB FOR DIRECTIONAL RAMPS ⑭

NOTES:

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

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

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

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

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

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

TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

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

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

4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER THE ENTIRE PAR WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK WITH THE EXCEPTION OF 3" MAXIMUM ON EACH OUTSIDE EDGE WHICH ENSURES THE DETECTABLE WARNINGS ARE ENCASED IN CONCRETE WHEN ADJACENT TO TURF. WHEN ADJACENT TO CONCRETE FLARES 0" - 3" OFFSET IS ALLOWED.

WHEN DESIGNING OR ORDERING RECTANGULAR DETECTABLE WARNING SURFACES SHOULD BE 6" LESS THAN THE INCOMING PAR. ARC LENGTH OF THE RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.

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

① MATCH FULL CURB HEIGHT.

② 3" HIGH CURB WHEN USING A 3' LONG RAMP
4" HIGH CURB WHEN USING A 4' LONG RAMP.

③ 3" MINIMUM CURB HEIGHT (5.5' MIN. DISTANCE REQUIRED BETWEEN DOMES)
4" PREFERRED (7' MIN. DISTANCE REQUIRED BETWEEN DOMES).

④ THE "BUMP" IN BETWEEN THE RAMPS SHOULD NOT BE IN THE PATH OF TRAVEL FOR COMBINED DIRECTIONAL RAMPS. IF THIS OCCURS MODIFY THE RAMP LOCATION OR SWITCH RAMP TO A FAN/DEPRESSED CORNER.

⑤ WHEN USING CONCRETE PAVED FLARES ON THE OUTSIDE OF DIRECTIONAL RAMPS, AND ADJACENT TO A WALKABLE SURFACE, DIRECTIONAL RAMP FLARES SHALL BE USED. SEE THE DETAIL ON THIS SHEET.

⑥ GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.

⑦ MAX. 2.0% SLOPE IN ALL DIRECTIONS IN FRONT OF GRADE BREAK AND DRAIN TO FLOW LINE. SHALL BE CONSTRUCTED INTEGRAL WITH CURB AND GUTTER.

⑧ 8% TO 10% WALKABLE FLARE.

⑨ PLACE DOMES AT THE BACK OF CURB WHEN ALLOWABLE SETBACK CRITERIA IS EXCEEDED.

⑩ FRONT EDGE OF DETECTABLE WARNING SHALL BE SET BACK 2' MAXIMUM WHEN ADJACENT TO WALKABLE SURFACE, AND 5' MAXIMUM WHEN ADJACENT TO NON-WALKABLE SURFACE WITH ONE CORNER SET 3" FROM BACK OF CURB. A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD MISTAKENLY BE TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.

⑪ RECTANGULAR DETECTABLE WARNINGS MAY BE SETBACK UP TO 9" FROM THE BACK OF CURB WITH CORNERS SET 3" FROM BACK OF CURB. IF 9" SETBACK IS EXCEEDED USE RADIAL DETECTABLE WARNINGS.

⑫ FOR DIRECTIONAL RAMPS WITH THE DETECTABLE WARNINGS PLACED AT THE BACK OF CURB, THE DETECTABLE WARNINGS SHALL COVER THE ENTIRE WIDTH OF THE WALK/PATH. THIS ENSURES A DETECTABLE EDGE AND HELPS ELIMINATE THE CURB TAPER OBSTRUCTING THE PATH OF PEDESTRIAN TRAVEL.

⑬ THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE BACK OF CURB. MAINTAIN 3" BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.

⑭ TO BE USED FOR ALL DIRECTIONAL RAMPS, EXCEPT WHERE DOMES ARE PLACED ALONG THE BACK OF CURB.

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

LEGEND

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

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

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

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

X" CURB HEIGHT

REVISION:

APPROVED: 11-04-2021
JEFFREY PERKINS
OPERATIONS DIVISION

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.250 | 2 OF 6

APPROVED: 11-04-2021
REVISED:

THOMAS STYRBICKI
STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS

STATE PROJ. NO. SAP 002-652-006 (T.H.) SAP 106-020-038

SHEET NO. 11 OF 62 SHEETS

PLOTTED/REVISED: 12/09/2022
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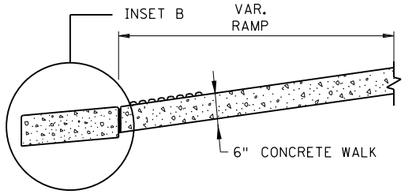
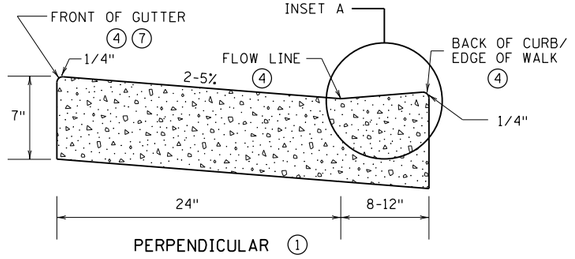
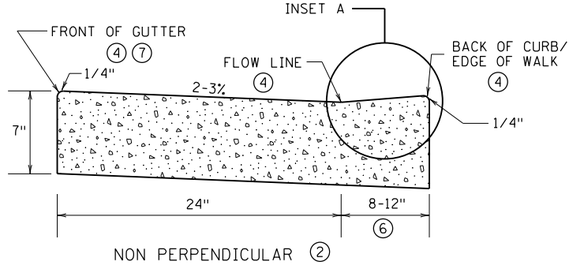
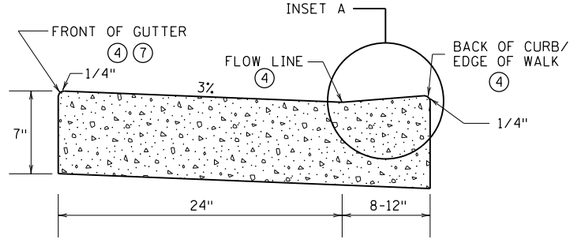




PERPENDICULAR (1)

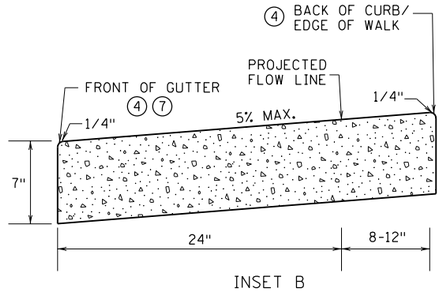


NON PERPENDICULAR (2)

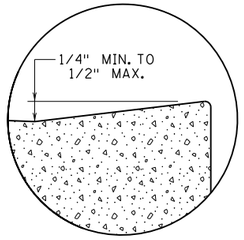


FOR CURB MACHINE PLACEMENT AROUND RADIUS (3)
(REGARDLESS OF RAMP TYPE)

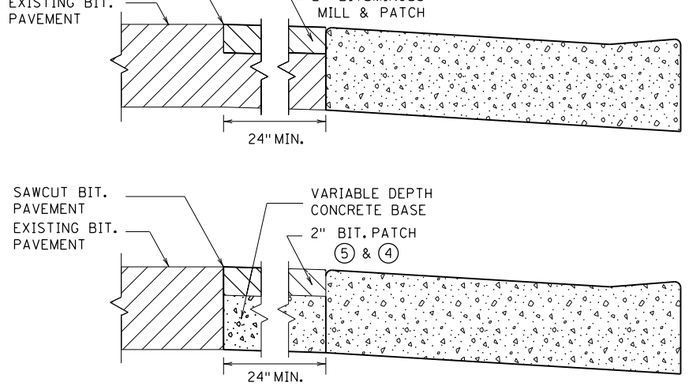
PEDESTRIAN ACCESS ROUTE CURB & GUTTER DETAIL



INSET B
OUTFLOW GUTTER (8)



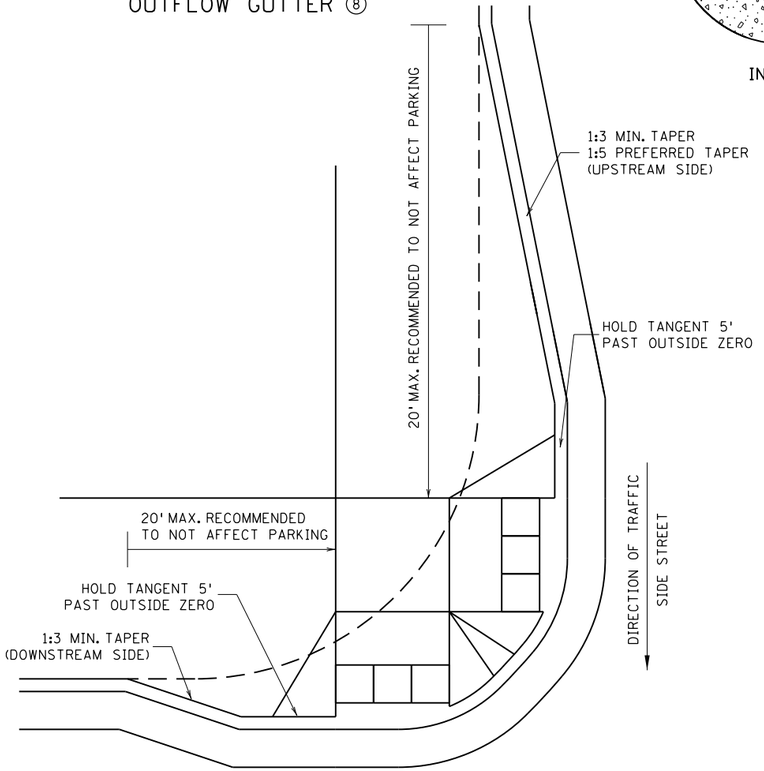
INSET A



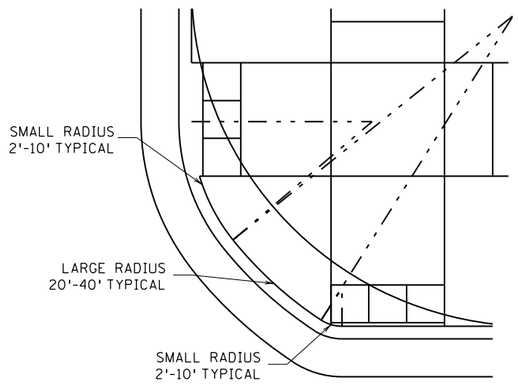
ONLY ALLOWED PER ENGINEER'S APPROVAL

PAVEMENT TREATMENT OPTIONS IN FRONT OF CURB & GUTTER

FOR USE ON CURB RAMP RETROFITS



ADA CURB EXTENSION WITH COMPOUND RADIUS (BUMP OUT) (11)



COMBINED DIRECTIONAL (10)
(COMPOUND RADIUS)

NOTES:

POSITIVE FLOW LINE DRAINAGE SHALL BE MAINTAINED THROUGH THE PEDESTRIAN ACCESS ROUTE (PAR) AT A 2% MAXIMUM.

NO PONDING SHALL BE PRESENT IN THE PAR.

ANY VERTICAL LIP THAT OCCURS AT THE FLOW LINE SHALL NOT BE GREATER THAN 1/4 INCH.

(1) FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: PERPENDICULAR, TIERED PERPENDICULAR, PARALLEL, AND DIAGONAL RAMPS.

(2) FOR USE AT CURB RAMPS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED NON PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: FANS & DEPRESSED CORNERS.

(3) BEGIN GUTTER SLOPE TRANSITION 10' OUTSIDE OF ALL CURB RAMPS.

(4) THERE SHALL BE NO VERTICAL DISCONTINUITIES GREATER THAN 1/4".

(5) ELEVATION CHANGE TAKES PLACE FROM THE EXISTING TO NEW FRONT OF GUTTER. PATCH IS USED TO MATCH THE NEW GUTTER FACE INTO THE EXISTING ROADWAY.

(6) VARIABLE WIDTH FOR DIRECTIONAL CURB APPLICATIONS. SEE SHEET 2 FOR DIRECTIONAL CURB SLOPE REQUIREMENTS.

(7) TOP FRONT OF GUTTER SHALL BE CONSTRUCTED FLUSH WITH PROPOSED ADJACENT PAVEMENT ELEVATION. TOP 1.5" OF THE GUTTER FACE MUST BE A FORMED EDGE. PAR GUTTER SHALL NOT BE OVERLAID.

(8) SHOULD BE USED AT VERTICALLY CONSTRAINED AREAS WHEN AT A DRAINAGE HIGH POINT OR SUPER ELEVATED ROADWAY SEGMENTS.

(9) DRILL AND GROUT NO. 4 EPOXY-COATED 18" LONG TIE BARS AT 30" CENTER TO CENTER INTO EXISTING CONCRETE PAVEMENT 1' MINIMUM FROM ALL JOINTS.

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

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

REVISION:

APPROVED: 11-04-2021
JEFFREY PERKINS
OPERATIONS DIVISION

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.250 | 3 OF 6

APPROVED: 11-04-2021
REVISED:

THOMAS STYRBICKI
STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS

STATE PROJ. NO. SAP 002-652-006 (TH) SAP 106-020-038

SHEET NO. 12 OF 62 SHEETS

PLOTTED/REVISED: 12/09/2022
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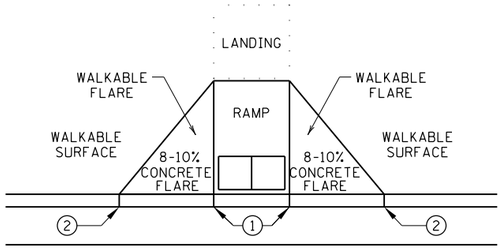
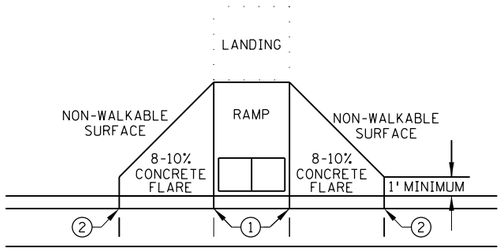
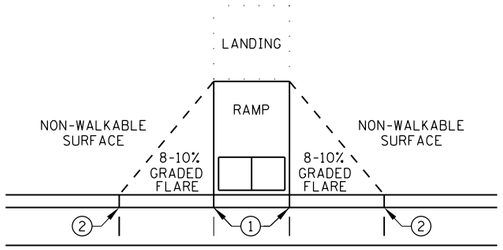


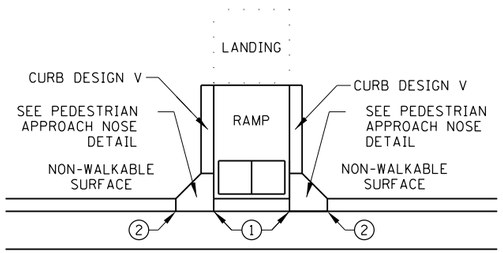
PAVED FLARES
ADJACENT TO WALKABLE SURFACE



PAVED FLARES
ADJACENT TO NON-WALKABLE SURFACE

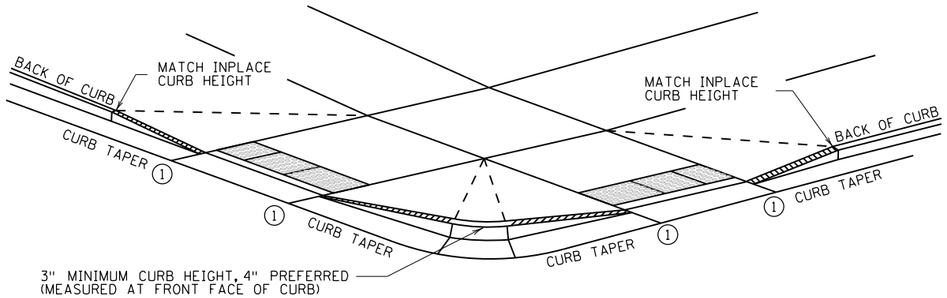


GRADED FLARES

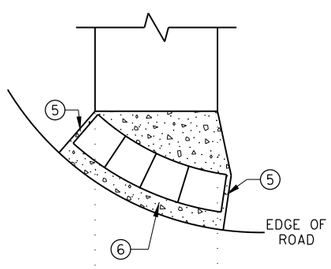


RETURNED CURB ④

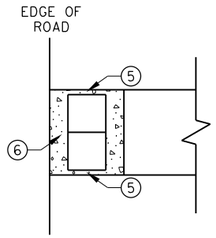
TYPICAL SIDE TREATMENT OPTIONS ③ ⑩



DETECTABLE EDGE WITH ⑦
CURB AND GUTTER

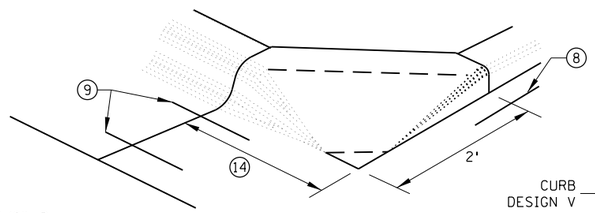


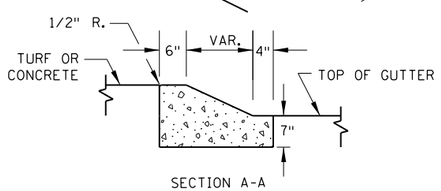
RADIAL DETECTABLE WARNING



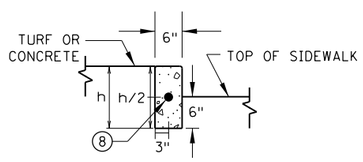
RECTANGULAR DETECTABLE WARNING

DETECTABLE EDGE WITHOUT CURB AND GUTTER

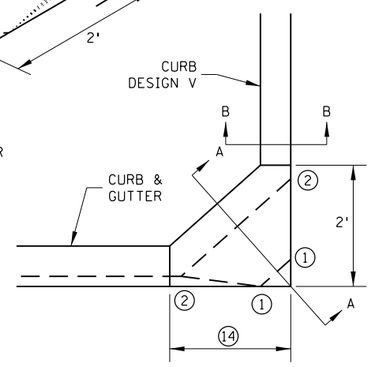




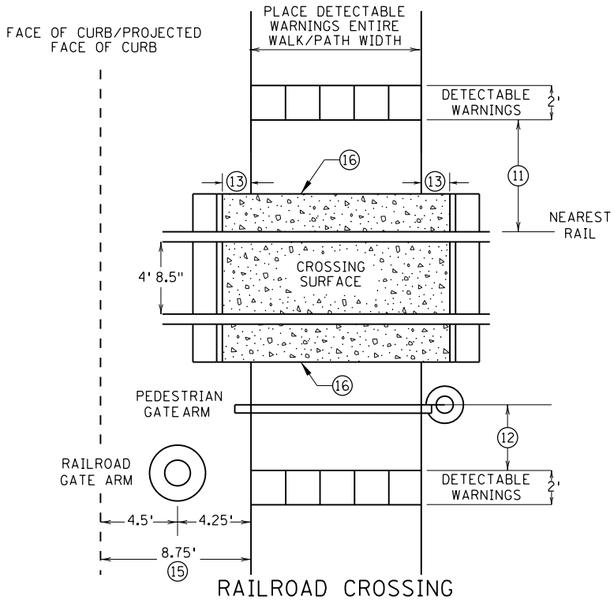
SECTION A-A



SECTION B-B



PEDESTRIAN APPROACH
NOSE DETAIL
(FOR RETURNED CURB
SIDE TREATMENT)



RAILROAD CROSSING
PLAN VIEW

NOTES:

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

SEE STANDARD PLATE 7038 AND THIS SHEET FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.

A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD MISTAKENLY BE TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.

CONCRETE FLARE LENGTHS ADJACENT TO NON-WALKABLE SURFACES SHOULD BE LESS THAN 8' LONG MEASURED ALONG THE RAMPS FROM THE BACK OF CURB.

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

② FULL CURB HEIGHT.

③ SIDE TREATMENTS ARE APPLICABLE TO ALL RAMP TYPES AND SHOULD BE IMPLEMENTED AS NEEDED AS FIELD CONDITIONS DICTATE. THE ENGINEER SHALL DETERMINE THE RAMP SIDE TREATMENTS BASED ON MAINTENANCE OF BOTH ROADWAY AND SIDEWALK, ADJACENT PROPERTY CONSIDERATIONS, AND MITIGATING CONSTRUCTION IMPACTS.

④ TYPICALLY USED FOR MEDIANS AND ISLANDS.

⑤ WHEN NO CONCRETE FLARES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE EDGE OF ROADWAY. MAINTAIN 3" MAX. BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.

⑥ IF NO CURB AND GUTTER IS PLACED IN RURAL SECTIONS, DETECTABLE WARNINGS SHALL BE PLACED 1' FROM THE EDGE OF BITUMINOUS ROADWAY AND/OR BITUMINOUS SHARED-USE PATH TO PROVIDE VISUAL CONTRAST.

⑦ ALL CONSTRUCTED CURBS MUST HAVE A CONTINUOUS DETECTABLE EDGE FOR THE VISUALLY IMPAIRED. THIS DETECTABLE EDGE REQUIRES DETECTABLE WARNINGS WHEREVER THERE IS ZERO-INCH HIGH CURB. CURB TAPERS ARE CONSIDERED A DETECTABLE EDGE WHEN THE TAPER STARTS WITHIN 3" OF THE EDGE OF THE DETECTABLE WARNINGS, AND UNIFORMLY RISES TO A 3-INCH MINIMUM CURB HEIGHT. ANY CURB NOT PART OF A CURB TAPER AND LESS THAN 3 INCHES IN HEIGHT IS NOT CONSIDERED A DETECTABLE EDGE AND THEREFORE IS NOT COMPLIANT WITH ACCESSIBILITY STANDARDS.

⑧ DRILL AND GROUT 1 - NO. 4 12" LONG REINFORCEMENT BAR (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE V CURB.

⑨ DRILL AND GROUT 2 - NO. 4 12" LONG REINFORCEMENT BARS (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE CURB AND GUTTER.

⑩ SIDE TREATMENT EXAMPLES SHOWN ARE WHEN THE INITIAL LANDING IS APPROXIMATELY LEVEL WITH THE FULL HEIGHT CURB (I.E. 6' LONG RAMP FOR 6" HIGH CURB). WHEN THE INITIAL LANDING IS MORE THAN 1" BELOW FULL HEIGHT CURB REFER TO SHEETS 1 & 2 TO MODIFY THE CURB HEIGHT TAPERS AND MAINTAIN POSITIVE BOULEVARD DRAINAGE. CONSTRUCT THESE TAPERS AT 0"-3" AT 8-10%, THEN LESS THAN 5% FROM 3" CURB TO FULL CURB HEIGHT.

⑪ NEAREST EDGE OF DETECTABLE WARNING SURFACES SHALL BE PLACED 12' MINIMUM TO 15' MAXIMUM FROM THE NEAREST RAIL. FOR SKEWED RAILWAYS IN NO INSTANCE SHALL THE DETECTABLE WARNING BE CLOSER THAN 12' MEASURED PERPENDICULAR TO THE NEAREST RAIL.

⑫ WHEN PEDESTRIAN GATES ARE PROVIDED, DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE SIDE OF THE GATES OPPOSITE THE RAIL, 2' FROM THE APPROACHING SIDE OF THE GATE ARM. THIS CRITERIA GOVERNS OVER NOTE ⑪.

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

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

⑮ SIDEWALK TO BE PLACED 8.75' MIN. FROM THE FACE OF CURB/PROJECTED FACE OF CURB. THIS ENSURES MIN. CLEARANCE BETWEEN THE SIDEWALK AND GATE ARM COUNTERWEIGHT SUPPORTS.

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

REVISION:

APPROVED: 11-04-2021
JEFFREY PERKINS
OPERATIONS DIVISION

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.250 | 4 OF 6

APPROVED: 11-04-2021
REVISED:

THOMAS STYRBICKI
STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS

STATE PROJ. NO. SAP 002-652-006 (TH) SAP 106-020-038 | SHEET NO. 13 OF 62 SHEETS

PLOTTED/REVISED: 12/09/2022
DISTRICT #:
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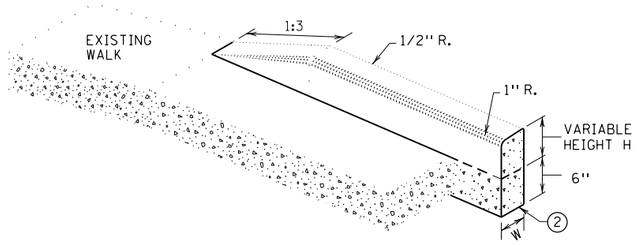
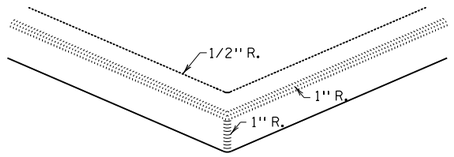


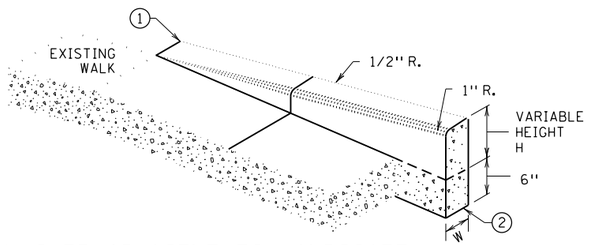
V CURB ADJACENT TO LANDSCAPE

CURB WITHIN SIDEWALK LIMITS



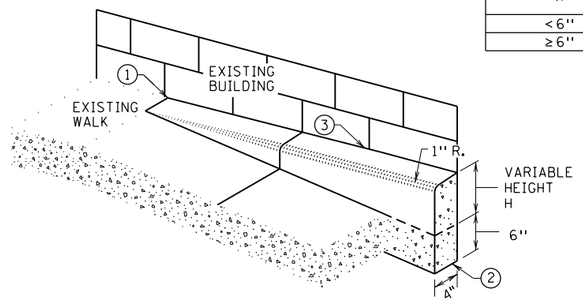
V CURB INTERSECTION

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

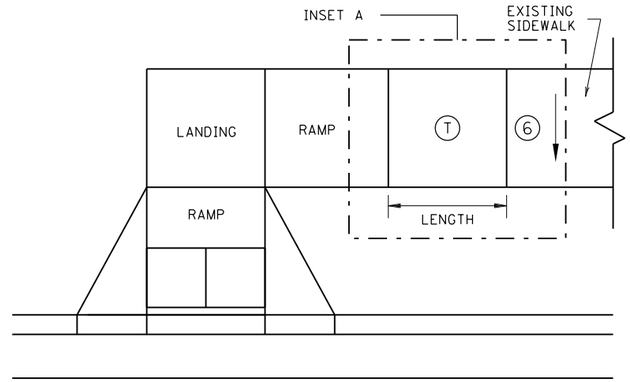


V CURB ADJACENT TO LANDSCAPE

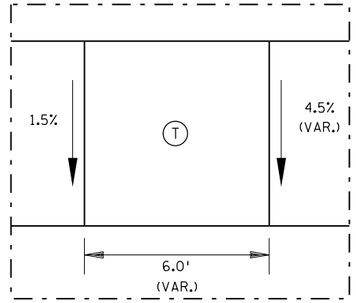
CURB OUTSIDE SIDEWALK LIMITS



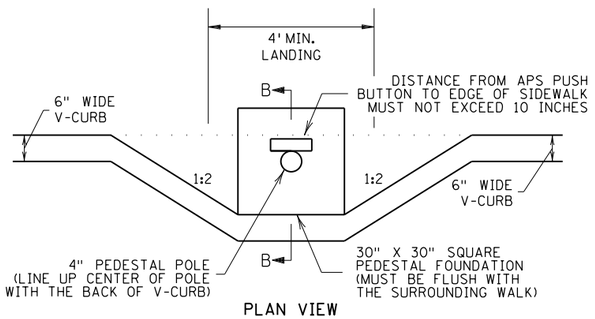
V CURB ADJACENT TO BUILDING OR BARRIER



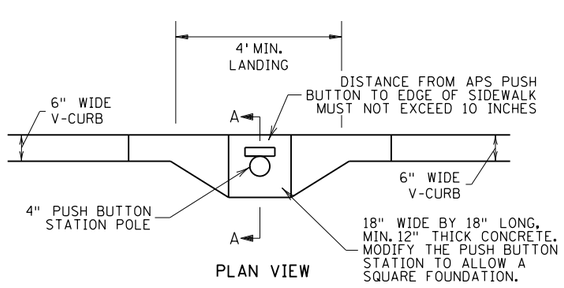
TRANSITION PANEL ④⑤



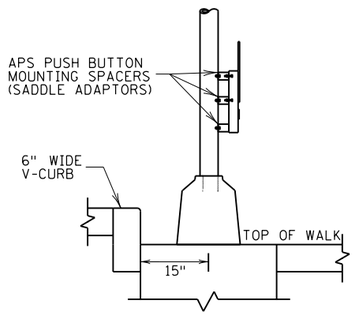
INSET A



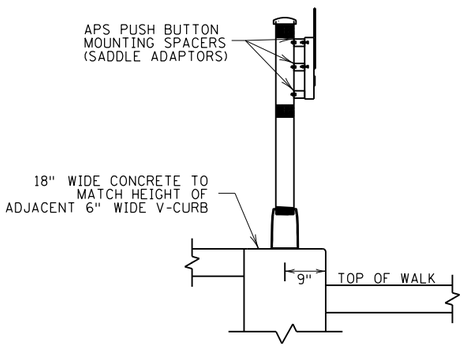
PLAN VIEW



PLAN VIEW



SECTION B-B



SECTION A-A

SIGNAL PEDESTAL & PUSH BUTTON (V-CURB)

PUSH BUTTON STATION (V-CURB)

NOTES:

A WALKABLE FLARE IS AN 8-10% CONCRETE FLARE THAT IS REQUIRED WHEN THE FLARE IS ADJACENT TO A WALKABLE SURFACE, OR WHEN THE PEDESTRIAN PATH OF TRAVEL OF A PUSH BUTTON TRAVERSES THE FLARE.

ALL V CURB CONTRACTION JOINTS SHALL MATCH CONCRETE WALK JOINTS.

WHERE RIGHT-OF-WAY ALLOWS, USE OF V CURB SHOULD BE MINIMIZED. GRADING ADJACENT TURF OR SLOPING ADJACENT PAVEMENT IS PREFERRED.

V CURB SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS.

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

(1) END TAPERS AT TRANSITION SECTION SHALL MATCH INPLACE SIDEWALK GRADES.

(2) ALL V CURB SHALL MATCH BOTTOM OF ADJACENT WALK.

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

(4) THE MAX. RATE OF CROSS SLOPE TRANSITIONING IS 1' LINEAR FOOT OF SIDEWALK PER HALF PERCENT CROSS SLOPE. WHEN PAR WIDTH IS GREATER THAN 6' OR THE RUNNING SLOPE IS GREATER THAN 5%, DOUBLE THE CALCULATED TRANSITION LENGTH.

(5) TRANSITION PANELS ARE TO ONLY BE USED AFTER THE RAMP, OR IF NEEDED, LANDING ARE AT THE FULL CURB HEIGHT (TYPICAL SECTION).

(6) EXISTING CROSS SLOPE GREATER THAN 2.0%.

LEGEND

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

(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%.

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

(T) TRANSITION PANEL(S) - TO BE USED FOR TRANSITIONING THE CROSS-SLOPE OF A RAMP TO THE EXISTING WALK CROSS-SLOPE. RATE OF TRANSITION SHOULD BE 0.5% PER 1 LINEAR FOOT OF WALK. SEE THIS SHEET FOR ADDITIONAL INFORMATION.

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OPERATIONS DIVISION

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.250 | 5 OF 6

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REVISED:

THOMAS STYRBICKI
STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS

STATE PROJ. NO. SAP 002-652-006 (TH) SAP 106-020-038

SHEET NO. 14 OF 62 SHEETS

DISTRICT #:
PLOT NAME: $$@PLOT$NAME@$$
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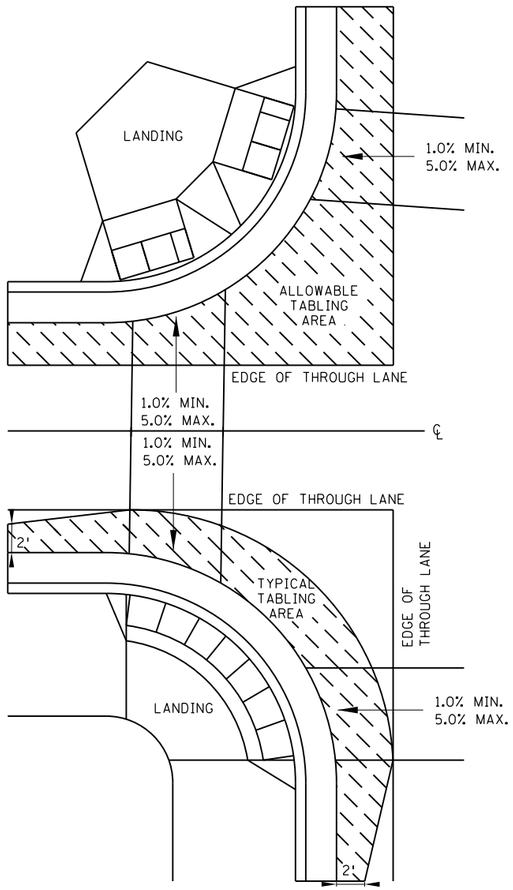
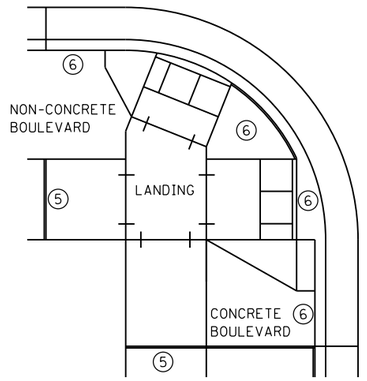
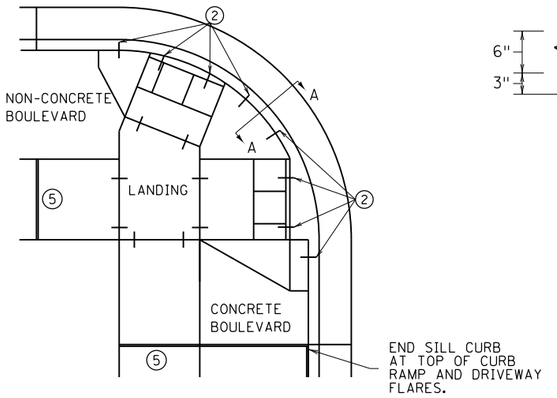
PLOTTED/REVISED: 12/09/2022



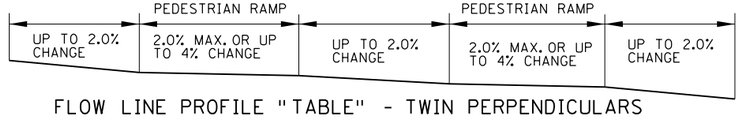
CURB LINE AND ROAD CROSSING ADJUSTMENTS



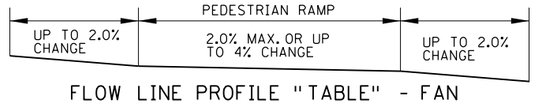
EXPANSION MATERIAL PLACEMENT
FOR CONCRETE ROADWAYS



CURB LINE REINFORCEMENT ④
PLACEMENT ON BITUMINOUS ROADWAYS



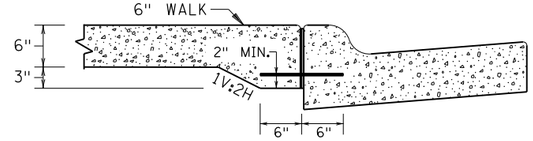
FLOW LINE PROFILE "TABLE" - TWIN PERPENDICULARS



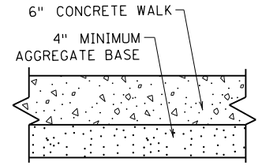
FLOW LINE PROFILE "TABLE" - FAN

FLOW LINE PROFILE RAISE - TWIN PERPENDICULARS

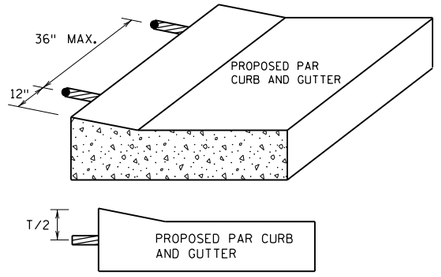
FLOW LINE PROFILE RAISE - FAN

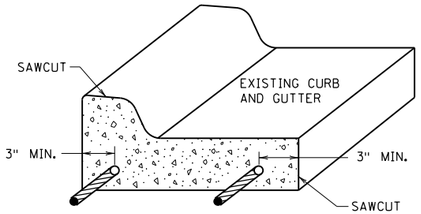


SECTION VIEW A-A
THICKENED SECTION
THROUGH CURB RAMP FLARES



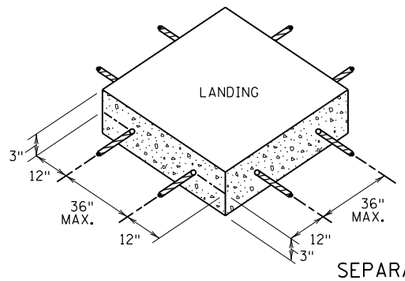
TYPICAL SIDEWALK SECTION
WITHIN INTERSECTION CORNER

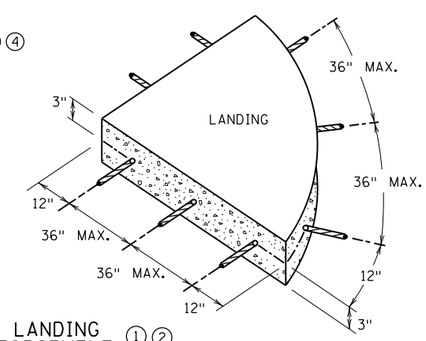




CURB AND GUTTER
REINFORCEMENT ③

CURB RAMP REINFORCEMENT DETAILS ②④





SEPARATE LANDING
POUR REINFORCEMENT ①②

GENERAL NOTES:

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

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

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

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

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

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

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

NOTES:

① TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, ALL INITIAL LANDINGS AT A TOP OF A RAMPED SURFACE (RUNNING SLOPE GREATER THAN 2%) SHALL BE FORMED AND PLACED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON THIS SHEET FOR ALL SEPARATELY POURED INITIAL LANDINGS.

② DRILL AND GROUT NO. 4 12" LONG REINFORCEMENT BARS (EPOXY COATED) AT 36" MAXIMUM CENTER TO CENTER MINIMUM 12" SPACING FROM CONSTRUCTION JOINTS. BARS TO BE ADJUSTED TO MATCH RAMP GRADE. BARS TO BE PAID BY EACH.

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

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

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

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

REVISION:

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JEFFREY PERKINS
OPERATIONS DIVISION

MINNESOTA DEPARTMENT OF TRANSPORTATION

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STANDARD PLAN 5-297.250 | 6 OF 6

APPROVED: 11-04-2021
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PEDESTRIAN CURB RAMP DETAILS

STATE PROJ. NO. SAP 002-652-006 (TH)
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SHEET NO. 15 OF 62 SHEETS

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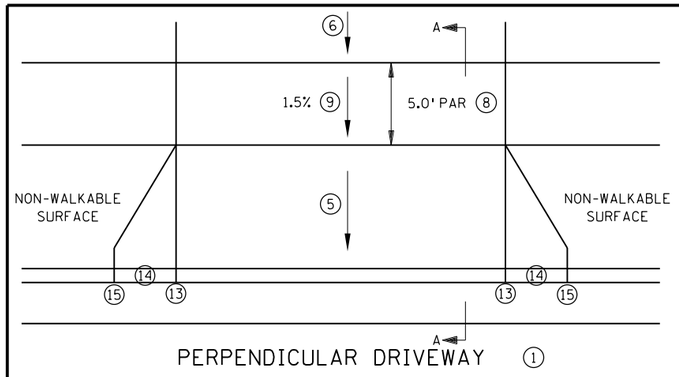
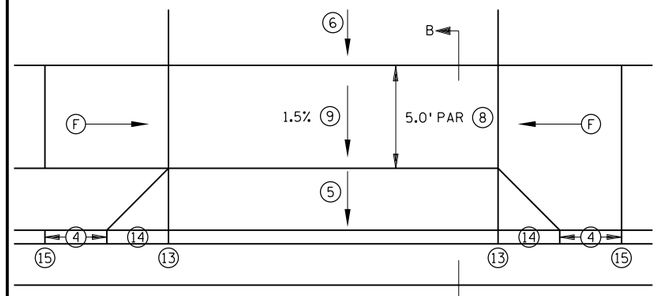
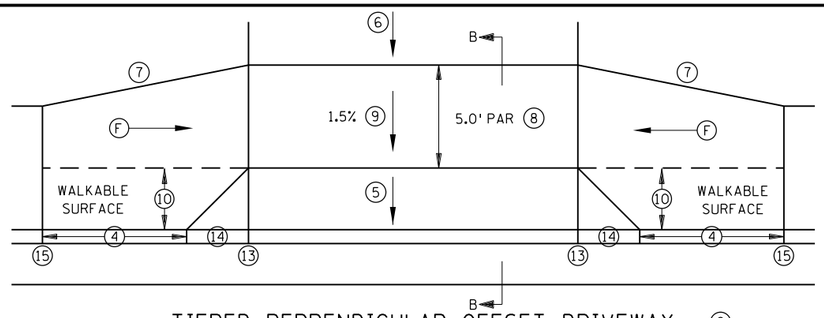


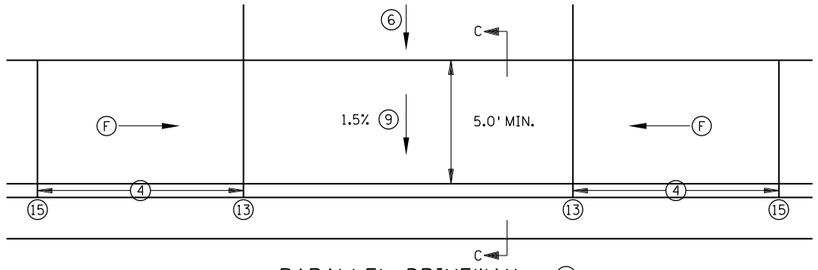
PERPENDICULAR DRIVEWAY ①



TIERED PERPENDICULAR DRIVEWAY ②



TIERED PERPENDICULAR OFFSET DRIVEWAY ②



PARALLEL DRIVEWAY ③

LEGEND

(F)	INDICATES DRIVEWAY 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%

NOTES:

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

IN URBAN ROADWAY SECTIONS, 6" CURB HEIGHT SHOULD BE USED WHEN 6' OR GREATER BOULEVARD WIDTH IS PROPOSED. WHEN BOULEVARD IS LESS THAN 6' WIDE, 4" CURB HEIGHT SHOULD BE USED.

MAINTAIN EXISTING DRAINAGE PATTERNS FLOWING TO PUBLIC RIGHT OF WAY.

ACQUIRE ADEQUATE L3 TO ALLOW FOR A CONTINUOUS PAR PROFILE (UNIFORM TYPICAL SIDEWALK SECTION) THROUGH THE DRIVEWAY APRON.

IN NO CASE SHALL SIDEWALK PROFILES EXCEED 5.0%, EXCEPT SIDEWALK PROFILES CAN MATCH ROADWAY GRADE IF ROADWAY GRADE IS GREATER THAN 5.0%. RAMPS FOR DRIVEWAYS ARE REQUIRED TO FOLLOW THE ABOVE SIDEWALK CRITERIA.

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

DRIVEWAY TYPES FROM MOST PREFERRED TO LEAST PREFERRED ARE AS FOLLOWS: PERPENDICULAR, TIERED PERPENDICULAR, TIERED PERPENDICULAR OFFSET & PARALLEL.

① PERPENDICULAR DRIVEWAYS ARE THE STANDARD AND STARTING POINT FOR ALL DRIVEWAY DESIGN AND CONSTRUCTION. SHOULD BE USED TO ACHIEVE CONTINUOUS PAR PROFILE THROUGH THE DRIVEWAY. OBTAINING A PERPENDICULAR DRIVEWAY DESIGN BECOMES MORE CRITICAL WITH STEEP ROADWAY PROFILES.

② TO BE USED WHEN PERPENDICULAR DRIVEWAY DESIGN CANNOT BE ACHIEVED, THE DRIVEWAY PAR IS BELOW ROADWAY CURB HEIGHT. THIS DRIVEWAY TYPE CAN BE USED FOR BOTH PAVED (AS SHOWN) AND GRASS BOULEVARDS.

③ TO BE USED WHEN PERPENDICULAR AND TIERED PERPENDICULAR DRIVEWAY DESIGN CANNOT BE ACHIEVED. CAN BE USED FOR STEEP NEGATIVE SLOPED DRIVEWAYS. DW CURB TYPE 2 SHOULD BE USED TO RAISE PAR ABOVE GUTTER AND REDUCE "ROLLER COASTER" EFFECT. 4" HIGH ROADWAY CURB SHOULD BE USED TO REDUCE "ROLLER COASTER" EFFECT ESPECIALLY WHEN MULTIPLE DRIVEWAYS ARE PRESENT.

④ TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

⑤ 8% STANDARD, 10% MAX. FOR COMMERCIAL AND 12% MAX. FOR RESIDENTIAL. SEE GENERAL NOTES ON SHEET 2 FOR MORE INFORMATION.

⑥ S3 8% MAXIMUM, IF THE SLOPE IS EXCEEDED OR CONTINUED FOR MORE THAN 5', ANALYZE VEHICLE TEMPLATES FOR VERTICAL CLEARANCE. IF EXISTING DRIVEWAY IS NEGATIVELY DRAINING, S3 CAN BECOME SLIGHTLY MORE NEGATIVE TO ACHIEVE PERPENDICULAR DRIVEWAY DESIGN IF THE VERTICAL CLEARANCE IS ACHIEVED IN VEHICLE TEMPLATES.

⑦ 1:3 MIN. 1:5 PREFERRED FOR DRIVEWAY RETROFIT PROJECTS. 1:10 PREFERRED FOR SIDEWALK REPLACEMENT PROJECTS.

⑧ 5.0' MIN. PAR WIDTH IS THE STANDARD THROUGH DRIVEWAYS. IF FEASIBLE WIDEN DRIVEWAY PAR WIDTH TO MATCH APPROACHING SIDEWALK PAR WIDTHS. IN VERTICALLY CONSTRAINED AREAS PAR WIDTHS CAN INCREMENTALLY BE REDUCED TO 4.5' OR 4' MIN AFTER ALL OTHER OPTIONS HAVE BEEN APPLIED.

⑨ THE PEDESTRIAN ACCESS ROUTE, MAY NOT EXCEED 0.02 FT./FT. AS CONSTRUCTED.

⑩ SIDEWALK OFFSET TO BE LESS THAN OR EQUAL TO HALF THE APPROACHING SIDEWALK WIDTH.

⑪ INTEGRAL DRIVEWAY APRON TO BE POURED MONOLITHICALLY/INTEGRAL WITH THE CURB AND GUTTER. SEE SHEET 2 FOR MORE INFORMATION.

⑫ SEE SHEET 2 FOR CURB TYPE INFORMATION.

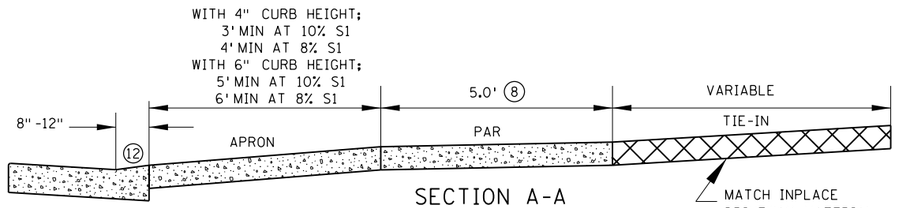
⑬ 0" CURB IS AT FLOW LINE. SEE DRIVEWAY TABLE FOR BACK OF CURB HEIGHTS.

⑭ 3' LONG AT 8-10% PREFERRED FOR INITIAL CURB TAPER. REDUCE CURB TAPER SLOPE IF NECESSARY TO MATCH ADJACENT SIDEWALK GRADES.

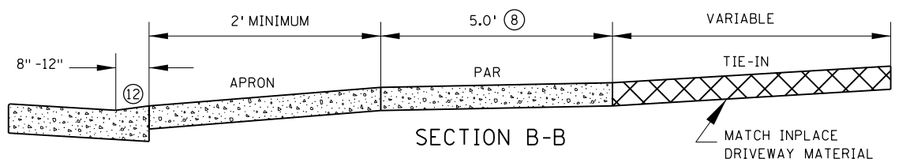
⑮ MATCH FULL CURB HEIGHT.

⑯ 1:2 TAPER RATE ON INTEGRAL DRIVEWAY APRONS.

⑰ SEE SHEET 4 FOR WHEN 6" WALK IS REQUIRED.



SECTION A-A



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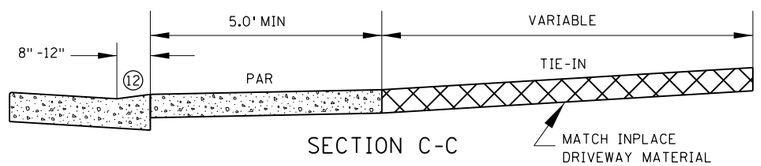
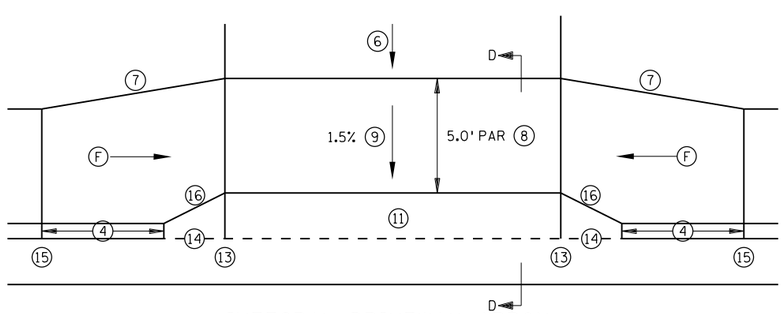
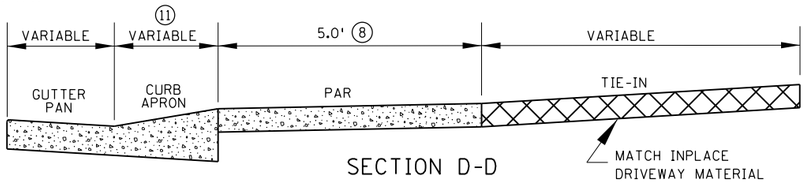


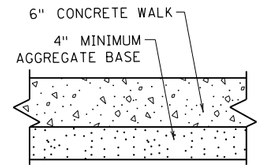
SECTION C-C



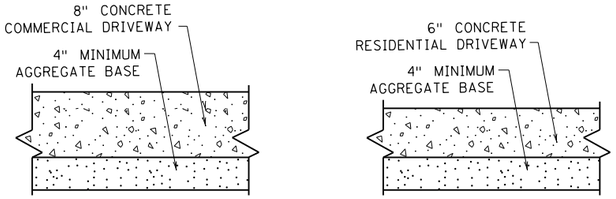
INTEGRAL DRIVEWAY APRON



SECTION D-D



TYPICAL SIDEWALK SECTION ⑰



TYPICAL DRIVEWAY SECTIONS

PLOTTED/REVISED: 12/09/2022

DISTRICT #;
PLOT NAME: $$@PLOT$NAME@$$
PATH & FILENAME: P:\002-652-006 Cloud Drive Signal\Plan\002652006_STD1.dgn

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JEFFREY PERKINS
OPERATIONS DIVISION

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.254 | 1 OF 4

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THOMAS STYRBICKI
STATE DESIGN ENGINEER

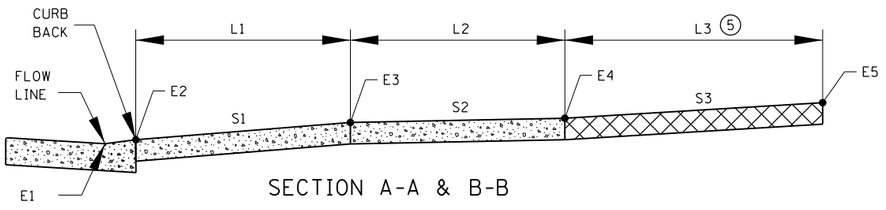
DRIVEWAY AND SIDEWALK DETAILS

STATE PROJ. NO. SAP 002-652-006 (TH) SAP 106-020-038

SHEET NO. 16 OF 62 SHEETS

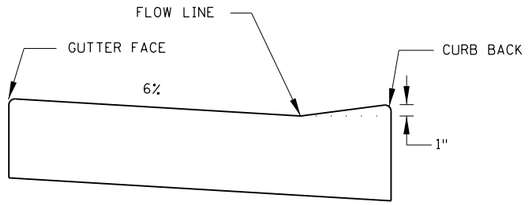
DRIVEWAY TABLE (1)

STATION	SIDE	DRIVEWAY TYPE (2)	CURB TYPE (3)	E1	E2	L1 FT	S1 %	E3	L2 FT	S2 (4) %	E4	L3 (5) FT	S3 %	EXISTING (6) %	E5	COMMENTS



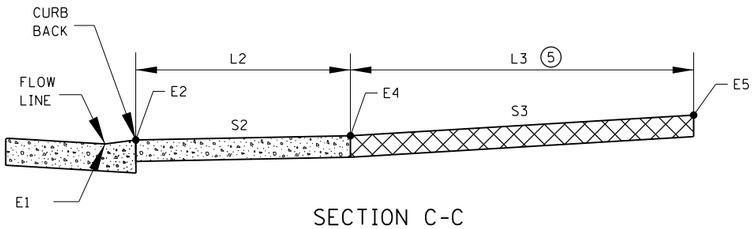
SECTION A-A & B-B

(REFER TO PREVIOUS SHEET)



DW CURB TYPE 1

STANDARD CURB AT DRIVEWAY



SECTION C-C

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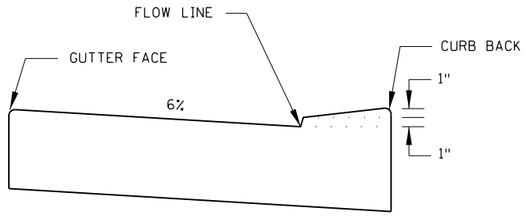
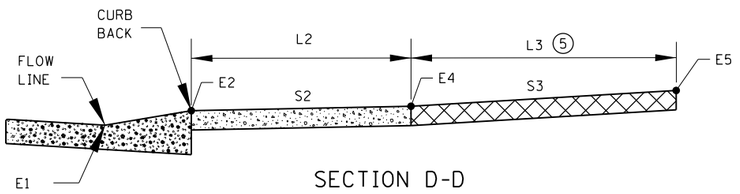


DW CURB TYPE 2

VERTICALLY CONSTRAINED



SECTION D-D

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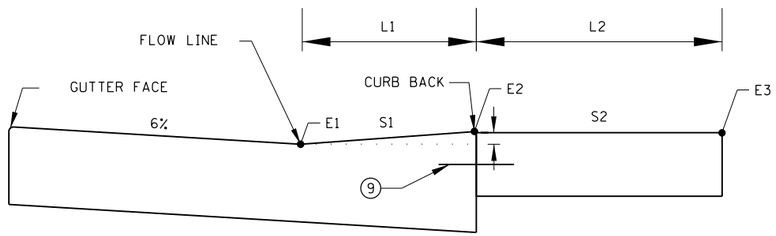

INTEGRAL DRIVEWAY APRON (IDA)

NOTES:

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

DW CURB TYPE 1 SHALL BE USED WHEN THE DRIVEWAY ACTS AS A PEDESTRIAN RAMP. THE MAX. APRON SLOPE MUST ADHERE TO ADA CRITERIA AS WELL. DW CURB TYPE 1 SHOULD BE USED IF THERE IS ON STREET PARKING.

WHERE ROADWAY DRAINAGE IS A CONCERN (NEGATIVE SLOPED APRON) DW CURB TYPE 2 CAN BE USED TO HELP KEEP THE WATER ON PUBLIC RIGHT OF WAY.

S1 8% STANDARD, 10% MAX. COMMERCIAL AND 12% MAX. RESIDENTIAL. IF EXISTING GRADES ARE STEEPER DO NOT MAKE GRADES APPRECIABLY WORSE BY USING BEST PRACTICES SUCH AS DRIVEWAY CURB HEIGHTS, EXTENDING L3 AND/OR STEEPEN S3.

S3 8% MAXIMUM, IF THIS SLOPE IS EXCEEDED OR CONTINUED FOR MORE THAN 5', ANALYZE VEHICLE TEMPLATES FOR VERTICAL CLEARANCE. SEE FACILITY DESIGN GUIDE, CHAPTER 6, FOR GEOMETRIC DESIGNS OF DRIVEWAYS.

(1) EXAMPLE SHOWN TO BE INCLUDED IN PLAN FOR EACH DRIVEWAY THAT HAS PAR THROUGH IT.

(2) REFERS TO THE FOLLOWING TYPES; PERPENDICULAR DRIVEWAY, TIERED PERPENDICULAR OFFSET DRIVEWAY, TIERED PERPENDICULAR DRIVEWAY, PARALLEL DRIVEWAY, AND INTEGRAL DRIVEWAY APRON.

(3) DW CURB TYPE 1 IS THE STANDARD AND SHALL BE THE STARTING POINT FOR ALL PERPENDICULAR AND TIERED DRIVEWAYS. DW CURB TYPE 2 SHALL ONLY BE USED AFTER UTILIZING BEST PRACTICES SUCH AS MAXIMIZING S1, S3, AND L3.

(4) SHOULD BE DESIGNED AT 1.5%.

(5) ACQUIRE ADEQUATE L3 TO ALLOW FOR CONTINUOUS PAR PROFILE (UNIFORM SIDEWALK SECTION) THROUGH THE DRIVEWAY APRON.

(6) PROVIDE INPLACE TIE-IN SLOPE INFORMATION AT BACK OF PROPOSED WALK (S3 AREA).

(7) INFORMATION TO BE INCORPORATED INTO DRIVEWAY TABLE WHEN INTEGRAL DRIVEWAY APRON IS USED. OTHER CURB HEIGHTS & CURB APRON LENGTHS CAN BE USED.

(8) L1 & S1 FOR INTEGRAL DRIVEWAY APRON IS TO FLOWLINE. 12.5% IS MAXIMUM PREFERRED SLOPE.

(9) TIE ADJACENT SECTIONS. CONCRETE DRIVEWAY APRON AND CONCRETE DRIVEWAY SIDEWALK SHALL BE CONSTRUCTED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. DRILL AND GROUT OR CAST IN-PLACE THROUGH HOLES IN THE FORMS NO. 4 X 12" LONG TIE BARS (EPOXY COATED). 36" MAXIMUM SPACING WITH 2" MINIMUM CONCRETE COVER PLACED 1' MINIMUM FROM ADJACENT CONSTRUCTION JOINT.

TYPICAL INTEGRAL DRIVEWAY APRON (7)			
CURB TYPE	L1 FT	E2	S1 (8) %
IDA 216	1.33	+0.16	12.5
IDA 220	1.67	+0.16	10
IDA 324	2	+0.24	12.5
IDA 432	2.67	+0.33	12.5

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OPERATIONS DIVISION

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STANDARD PLAN 5-297.254 | 2 OF 4

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REVISED:

THOMAS STYRBICKI
STATE DESIGN ENGINEER

DRIVEWAY AND SIDEWALK DETAILS

STATE PROJ. NO. SAP 002-652-006 (TH) SAP 106-020-038 (TH)

SHEET NO. 17 OF 62 SHEETS

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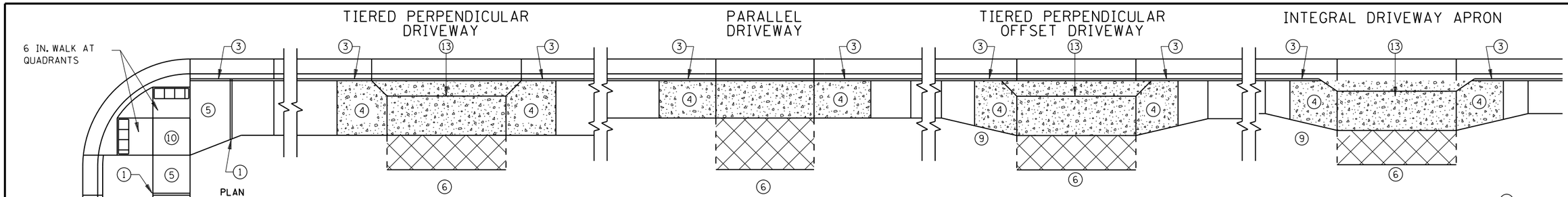
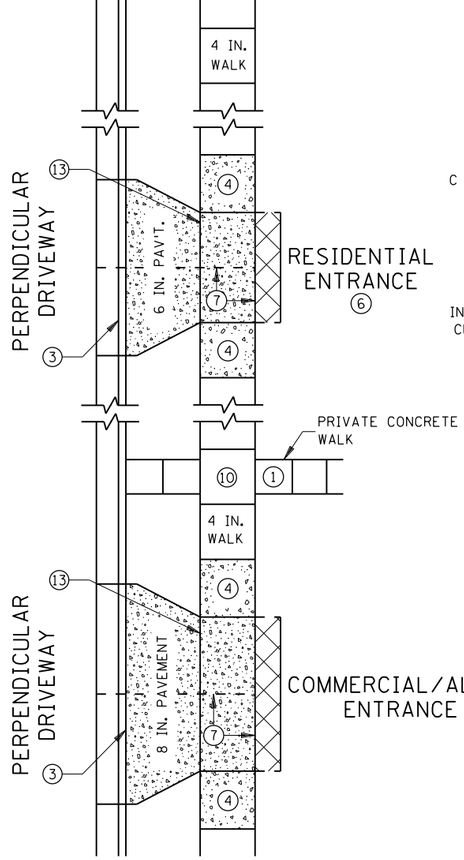
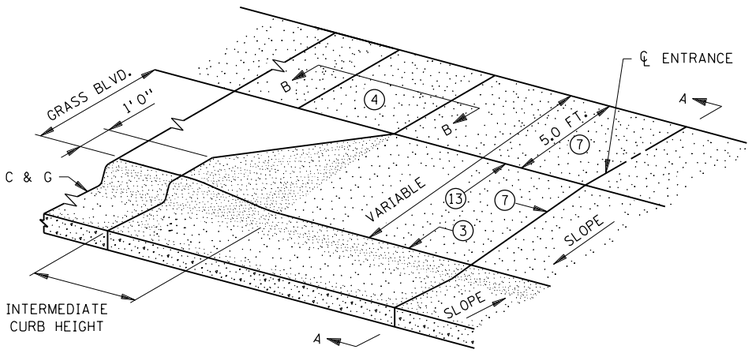
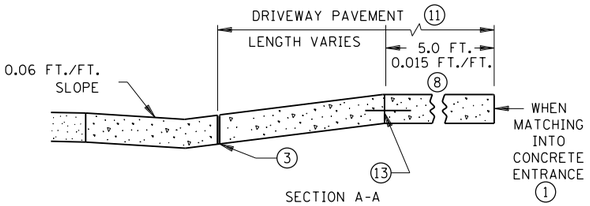




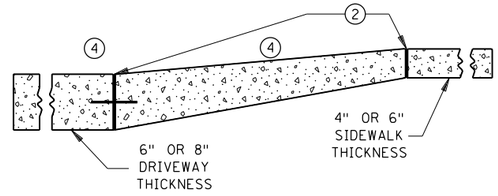


HALF PLAN PERSPECTIVE

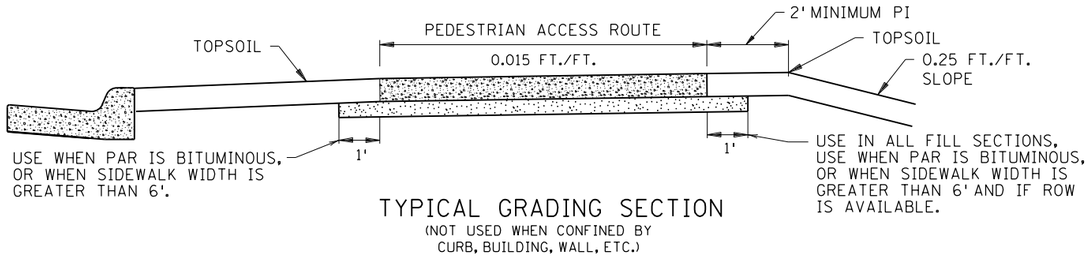
PERPENDICULAR DRIVEWAYS WITH GRASS BOULEVARDS



SECTION THRU DRIVEWAY

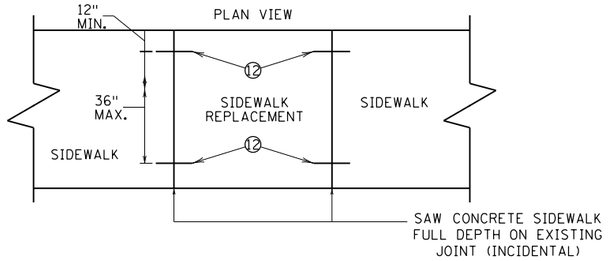


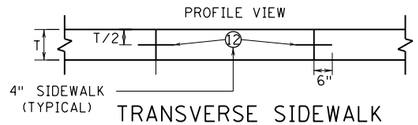
SECTION THRU SIDEWALK THICKNESS TRANSITION



TYPICAL GRADING SECTION

(NOT USED WHEN CONFINED BY CURB, BUILDING, WALL, ETC.)





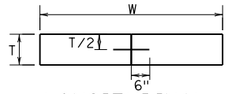
TRANSVERSE SIDEWALK TIE BAR REINFORCEMENT

RETROFITS ONLY

SIDEWALK LONGITUDINAL JOINT TIE BAR TABLE				
SIDEWALK WIDTH, W	SIDEWALK THICKNESS, T	TIE BAR SIZE	LENGTH	SPACING
> 7'	4"	No. 4	12"	24"
>10'	6"	No. 4	12"	36"

FOR 4" CONCRETE ONLY: CAST IN PLACE BARS MUST BE SUPPORTED WITH P-STAKES OR REINFORCEMENT BASKETS FOR FULL WIDTH CONCRETE PLACEMENTS.

FOR 6" CONCRETE ONLY: DRILL AND GROUT OR CAST IN PLACE THROUGH HOLES IN THE FORMS REQUIRED FOR STAGED ADJACENT CONCRETE PLACEMENTS.



LONGITUDINAL SIDEWALK REINFORCEMENT JOINTS

NOTES:

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

TO MINIMIZE SIDEWALK "ROLLER COASTER" EFFECT IT IS DESIRABLE TO KEEP THE PAR ELEVATION CONTINUOUS OR AT LEAST IN THE UPPER HALF OF CURB HEIGHT. 4" HIGH CURB SHOULD BE USED INSTEAD OF 6" HIGH CURB TO HELP THIS PROBLEM WHEN APPLICABLE.

4" HIGH ADJACENT CURB IS PREFERRED WHEN BOULEVARDS 4' OR LESS ARE PRESENT MEASURED FROM THE BACK OF CURB. WHEN THE DRIVEWAY IS SLOPING DOWN FROM THE ROADWAY (NEGATIVE) 4" HIGH ADJACENT CURB SHOULD ALSO BE USED.

SEE FACILITY DESIGN GUIDE, CHAPTER 6, FOR GEOMETRIC DESIGN OF DRIVEWAYS.

(1) CONSTRUCT WITH EXPANSION MATERIAL PER MNDOT SPECIFICATION 3702 TYPES A-E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE. DRIVEWAY EXPANSION SHALL BE PLACED AT TOP OR BOTTOM OF TRANSITION PANEL.

(2) CONSTRUCT WITH EXPANSION MATERIAL MNDOT PER SPEC. 3702 TYPES A-E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE. MAXIMUM ONE EXPANSION PER DRIVEWAY PLACED AT EITHER TOP OR BOTTOM OF CONCRETE THICKNESS TRANSITION. IF MULTIPLE DRIVEWAYS EXIST PLACE ONE EXPANSION BETWEEN EACH DRIVEWAY. IF NO DRIVEWAY EXIST PLACE A MAXIMUM OF ONE EXPANSION PER 150' OF SIDEWALK RUN.

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

(4) TRANSITION DRIVEWAY THICKNESS TO WALK THICKNESS. IF THERE IS A CONSTRUCTION JOINT AND NO EXPANSION IS USED, INSTALL TIE BARS.

(5) TRANSITION CURB RAMP THICKNESS TO WALK THICKNESS.

(6) MATCH INPLACE DRIVEWAY WIDTH, MATERIAL TYPE AND THICKNESS.

(7) FORM CONTRACTION JOINT AS NEEDED TO PRODUCE APPROXIMATELY SQUARE PANELS. CONCRETE PANEL SIZE SHOULD NOT EXCEED 1 1/2 : 1 LENGTH X WIDTH. 81 SF FOR 6" CONCRETE DRIVEWAY WITH 9'X9' MAXIMUM PANEL SIZE. 144 SF FOR 8" CONCRETE DRIVEWAY WITH 12'X12' MAXIMUM PANEL SIZE. MATCH DRIVEWAY APRON AND SIDEWALK JOINTS.

(8) THE PEDESTRIAN ACCESS ROUTE CROSS-SLOPE, SHALL NOT EXCEED 0.02 FT./FT. AS CONSTRUCTED.

(9) 1:10 MIN. SIDEWALK OFFSET TAPER REQUIRED FOR SIDEWALK REPLACEMENT PROJECTS. 1:3 MIN. AND 1:5 MIN. PREFERRED SIDEWALK OFFSET TAPER FOR DRIVEWAY REPLACEMENT.

(10) LANDING REQUIRED, SEE NEXT SHEET FOR MORE INFORMATION.

(11) CONCRETE DRIVEWAY APRON AND CONCRETE DRIVEWAY SIDEWALK SECTIONS SHALL BE CONSTRUCTED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. ENGINEER'S APPROVAL REQUIRED FOR MONOLITHIC PLACEMENTS.

(12) DRILL AND GROUT NO. 4 X 12" LONG TIE BARS (EPOXY COATED). 36" MAXIMUM SPACING BETWEEN BARS COVER PLACED 1' MINIMUM FROM ADJACENT CONSTRUCTION JOINTS. 1' MINIMUM FROM ADJACENT CONCRETE JOINTS. BARS TO BE ADJUSTED TO MATCH SIDEWALK GRADES. TO BE PAID BY EACH.

(13) DRILL AND GROUT OR CAST IN-PLACE THROUGH HOLES IN THE FORMS NO. 4 X 12" LONG TIE BARS (EPOXY COATED). 36" MAXIMUM SPACING BETWEEN BARS WITH 2" MINIMUM CONCRETE COVER PLACED 1' MINIMUM FROM ADJACENT CONSTRUCTION JOINTS. 1' MINIMUM FROM ADJACENT CONCRETE JOINTS.

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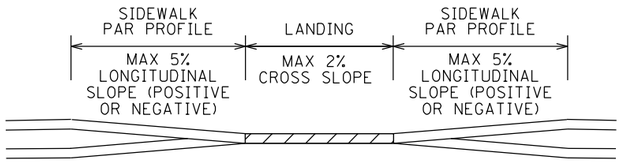
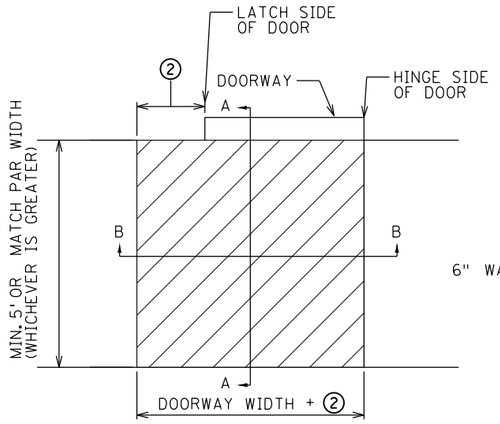
DRIVEWAY AND SIDEWALK DETAILS

STATE PROJ. NO. SAP 002-652-006 (TH) SAP 106-020-038

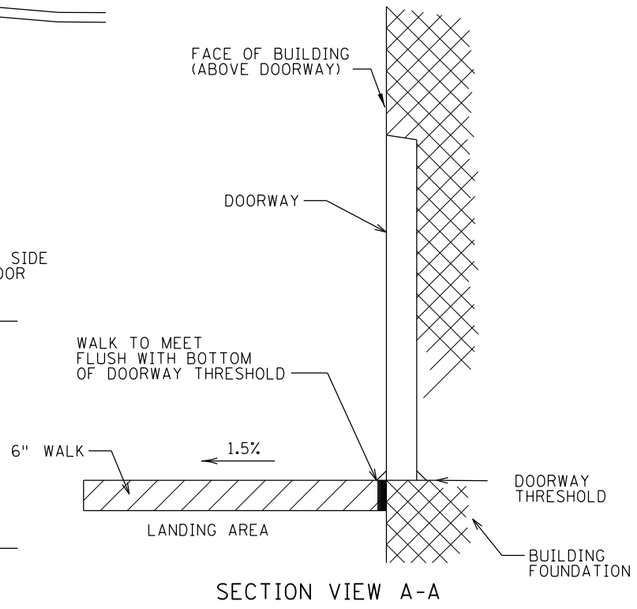
SHEET NO. 18 OF 62 SHEETS



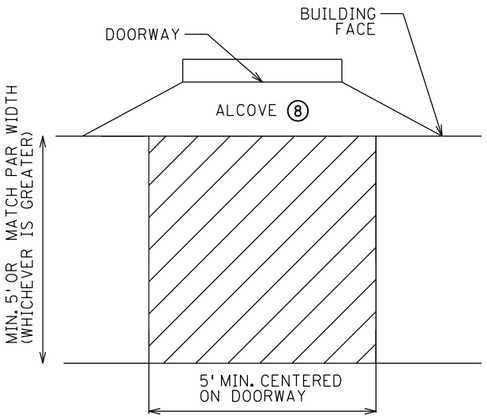
SECTION VIEW B-B



PLAN VIEW DOORWAY

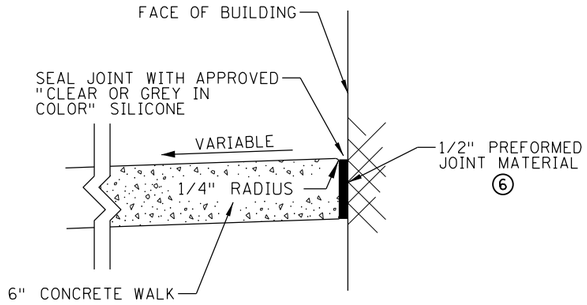


SECTION VIEW A-A

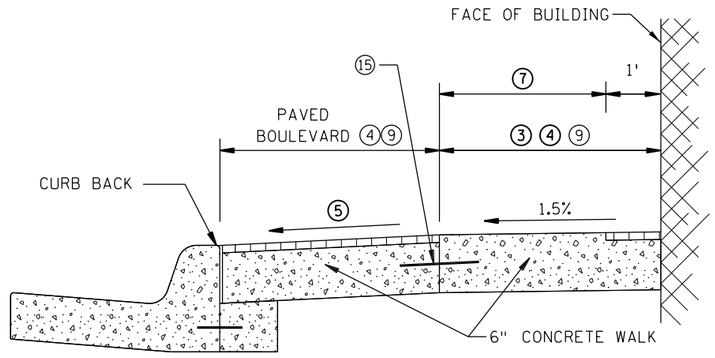


PLAN VIEW DOORWAY WITH ALCOVE

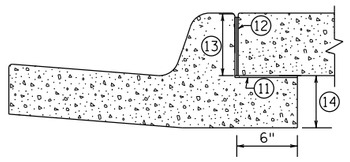
SIDEWALK LANDING REQUIREMENTS ①



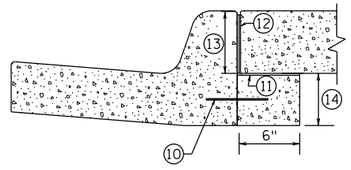
BUILDING JOINT SEAL (INCIDENTAL)



DOWNTOWN SIDEWALK TYPICAL SECTION



SLIP FORM SILL



FIXED FORM SILL

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

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

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

NOTES:

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

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

FIELD ADJUST SIDEWALK PROFILES TO MEET ALL DOORWAY THRESHOLDS.

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

SEE SPECIAL PROVISIONS FOR SILICONE SPECIFICATIONS.

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

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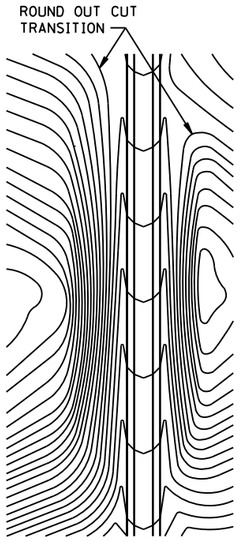
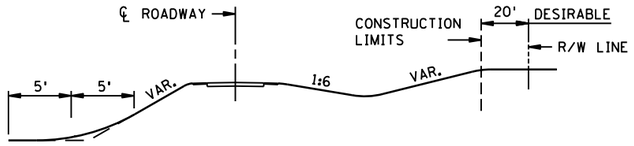
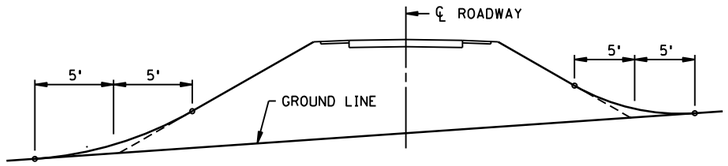


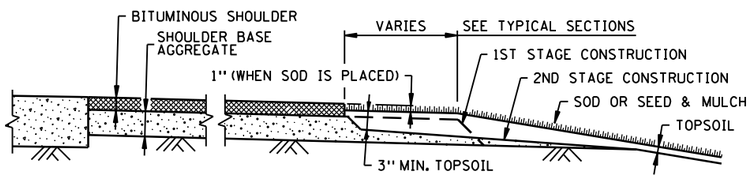
CONTOURING ROAD CUTS



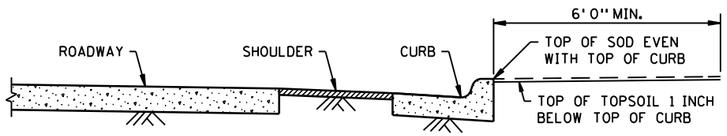
ROUNDING SHOULDERS AND BACKSLOPES



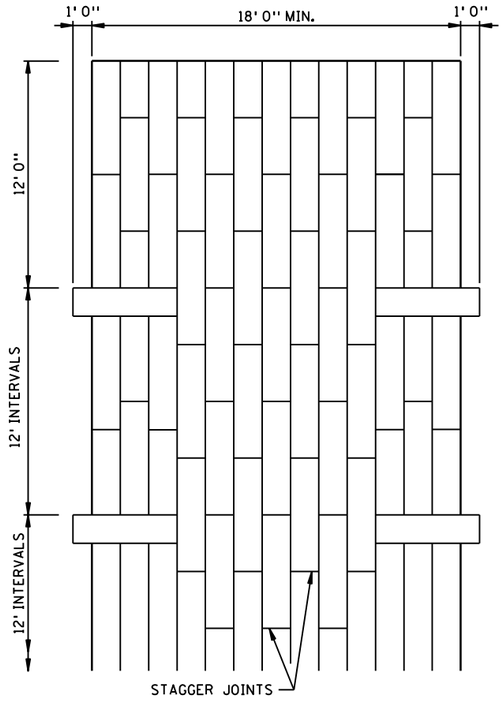
SHAPING FOR DRAINAGE ALONG THE TOE OF FILL SLOPES



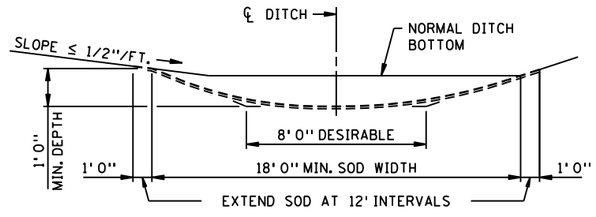
SHAPING AND TOPSOILING INSLOPES



SHAPING ADJACENT TO CURBS WHEN SOD IS PLACED

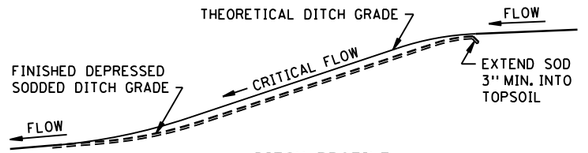


PLAN VIEW



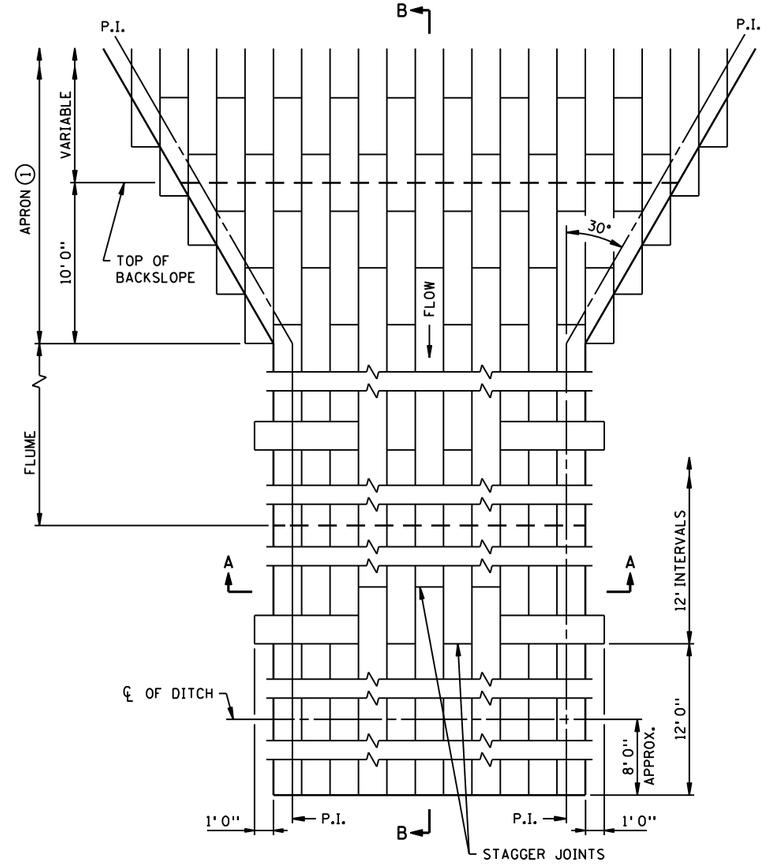
SODDED DITCH CROSS SECTION

WHERE FRONT OR BACK SLOPE IS FLAT (LESS THAN 1/2"/FT.), FIRST NOTCH DITCH AND THEN PROVIDE ROUNDING.

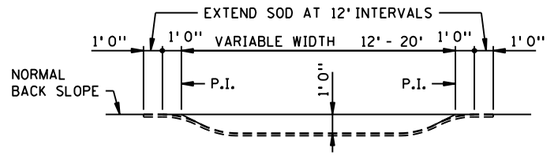


DITCH PROFILE

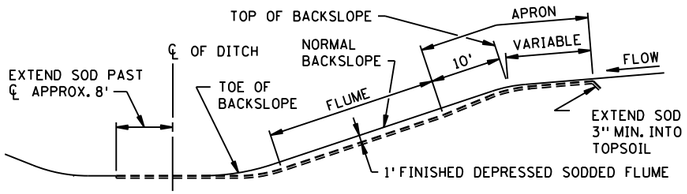
SODDED DITCH DETAILS



PLAN VIEW



SECTION A-A



SECTION B-B

SODDED FLUME DETAILS

NOTES:
SEE SPEC. 2575.3 FOR ADDITIONAL INFORMATION.
① CONSTRUCT TAPER AS DIRECTED BY THE ENGINEER.

REVISION:

APPROVED: 2-28-2017
CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.404 | 1 OF 3

APPROVED: 2-28-2017
REVISED:

STATE DESIGN ENGINEER

PERMANENT EROSION CONTROL

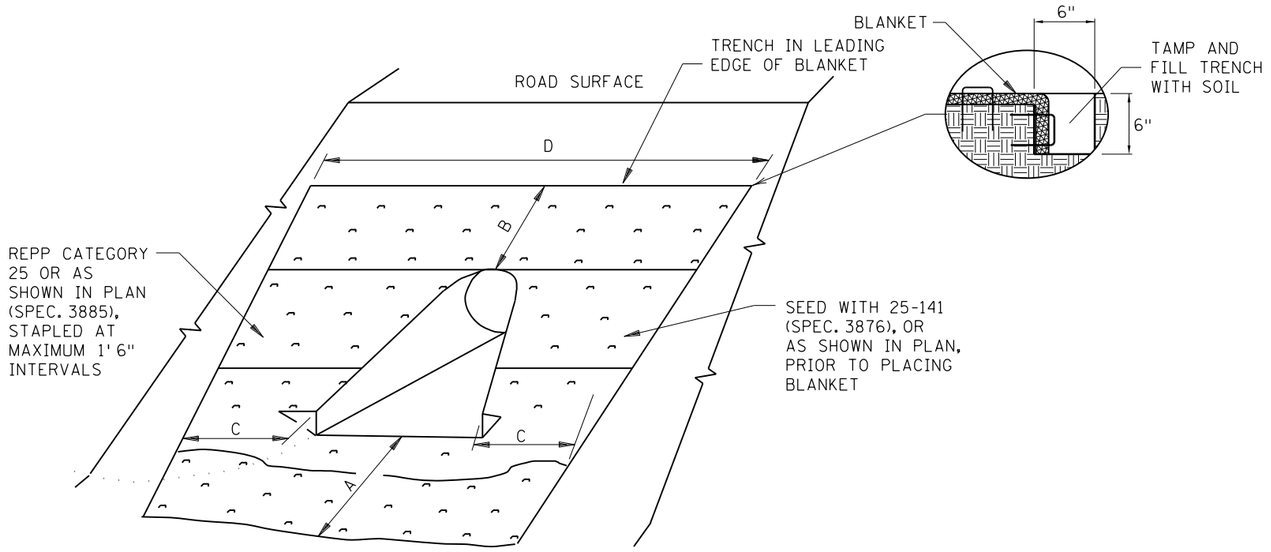
ALONG ROADWAYS, DITCHES AND FLUMES

STATE PROJ. NO. SAP 002-652-006 (T.H.) SAP 106-020-038

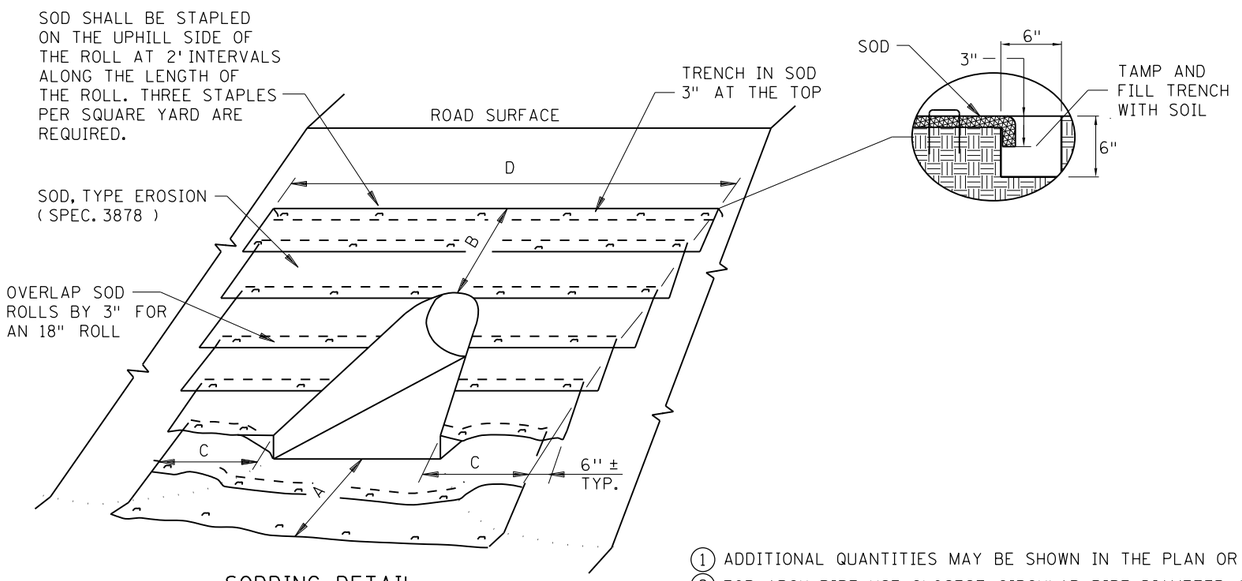
SHEET NO. 20 OF 62 SHEETS

PLOTTED/REVISED: 12/09/2022

DISTRICT *:
IPLOT NAME: $$@IPLOT$NAME@$$
PATH & FILENAME: P:\002-652-006 Cloud Drive Signal\Plan\002652006_STD1.dgn



ROLLED EROSION PREVENTION PRODUCT (BLANKET) & SEED DETAIL



SODDING DETAIL

CULVERT INLET APRON ①										
CULVERT DIAMETER ②	SOD OR REPP (SQ. YDS.)						"A"	"B"	"C"	"D"
	CIRCULAR AND ARCH PIPE METAL APRON (PLATE 3123, PLATE 3122)	CIRCULAR AND ARCH PIPE CONCRETE APRON (PLATE 3100, PLATE 3110)	CIRCULAR AND ARCH PIPE METAL SAFETY APRON 1:4 SLOPE (PLATE 3148)	CIRCULAR AND ARCH PIPE METAL SAFETY APRON 1:6 SLOPE (PLATE 3148)	CIRCULAR CORRUGATED METAL PIPE SAFETY APRON 1:6 SLOPE (PLATE 3128)	CIRCULAR CORRUGATED METAL PIPE SAFETY APRON 1:4 SLOPE (PLATE 3128)				
15"	9	9	8	8	N/A	N/A	3'	1.5'	3'	13'
18"	13	12	12	14	16	N/A	3'	3'	3'	16'
21"	14	14	14	16	18	14	3'	3'	3'	17'
24"	16	15	16	19	21	17	3'	3'	3'	18'
27"	N/A	20	N/A	N/A	N/A	N/A	3'	4.5'	3'	20'
30"	23	22	25	30	32	N/A	3'	4.5'	3'	22'
36"	34	34	39	48	51	37	4.5'	4.5'	4.5'	27'
42"	43	40	51	64	N/A	N/A	4.5'	6'	4.5'	30'
48"	54	50	66	82	N/A	N/A	4.5'	7.5'	4.5'	34'
54"	65	58	81	102	N/A	N/A	4.5'	9'	4.5'	37'
60"	69	59	91	115	N/A	N/A	4.5'	9'	4.5'	39'
66"	69	63	N/A	N/A	N/A	N/A	4.5'	9'	4.5'	39'
72"	78	72	99	122	N/A	N/A	4.5'	10.5'	4.5'	41'

CULVERT OUTLET APRON ①										
CULVERT DIAMETER ②	SOD OR REPP (SQ. YDS.)						"A"	"B"	"C"	"D"
	CIRCULAR AND ARCH PIPE METAL APRON (PLATE 3123, PLATE 3122)	CIRCULAR AND ARCH PIPE CONCRETE APRON (PLATE 3100, PLATE 3110)	CIRCULAR AND ARCH PIPE METAL SAFETY APRON 1:4 SLOPE (PLATE 3148)	CIRCULAR AND ARCH PIPE METAL SAFETY APRON 1:6 SLOPE (PLATE 3148)	CIRCULAR CORRUGATED METAL PIPE SAFETY APRON 1:6 SLOPE (PLATE 3128)	CIRCULAR CORRUGATED METAL PIPE SAFETY APRON 1:4 SLOPE (PLATE 3128)				
15"	10	10	9	10	N/A	N/A	4.5'	1.5'	3'	13'
18"	13	13	12	14	15	N/A	6'	1.5'	3'	14'
21"	16	14	16	18	19	15	6'	1.5'	3'	15'
24"	18	18	18	21	22	18	7.5'	1.5'	3'	16'
27"	N/A	19	N/A	N/A	N/A	N/A	7.5'	1.5'	3'	17'
30"	23	23	24	28	29	N/A	9'	1.5'	3'	18'
36"	36	35	38	47	48	37	10.5'	1.5'	4.5'	23'
42"	43	40	47	58	N/A	N/A	12'	1.5'	4.5'	25'
48"	50	46	57	70	N/A	N/A	13.5'	1.5'	4.5'	27'
54"	57	50	67	84	N/A	N/A	15'	1.5'	4.5'	29'
60"	74	63	90	113	N/A	N/A	16.5'	1.5'	6'	33'
66"	75	67	N/A	N/A	N/A	N/A	16.5'	1.5'	6'	33'
72"	77	70	92	114	N/A	N/A	16.5'	1.5'	6'	34'

NOTES:

REPP = ROLLED EROSION PREVENTION PRODUCT.

AREA SHOWN IN SQUARE YARDS IS FOR ONE CULVERT END.

QUANTITIES ARE CALCULATED TO INCLUDE SOD REQUIRED TO PROVIDE A 3" OVERLAP ON ALL 18" WIDE ROLLS. THIS ALLOWS FOR SHRINKAGE OF THE SOD.

FOR PIPE ARCHES USE EQUIVALENT PIPE DIAMETER TO APPROXIMATE AREA.

FOR CORRUGATED POLYETHYLENE PIPE METAL APRON (PLATE 3129), USE THE METAL APRON COLUMN (PLATE 3123).

AREAS AND DIMENSIONS ARE APPROXIMATE AND ARE BASED ON APRON SIDE SLOPES OF NO STEEPER THAN 1:2, UNLESS INDICATED AS FOR SAFETY APRONS.

CARE SHOULD BE TAKEN IN SELECTING SOD TO STABILIZE THE APRON. RIP-RAP SHOULD BE USED FOR FLOW VELOCITIES GREATER THAN 6 FPS.

① ADDITIONAL QUANTITIES MAY BE SHOWN IN THE PLAN OR REQUIRED BY THE ENGINEER.

② FOR ARCH PIPE USE CLOSEST CIRCULAR PIPE DIAMETER AND APRON SLOPE. DIAMETERS LARGER THAN 72" REQUIRE SPECIAL DESIGNS.

REVISION:

APPROVED: JANUARY 8, 2020

MARNI KARNOWSKI
CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.404 | 2 OF 3

APPROVED: 1-8-2020
REVISED:

THOMAS STYRBICKI
STATE DESIGN ENGINEER

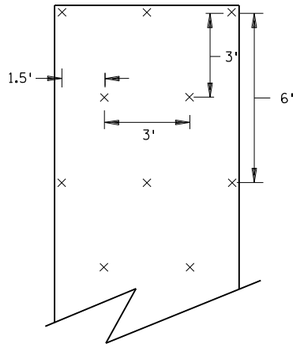
PERMANENT EROSION CONTROL

TURF ESTABLISHMENT DETAIL AT CULVERT ENDS

STATE PROJ. NO. SAP 002-652-006 (H.) SAP 106-020-038

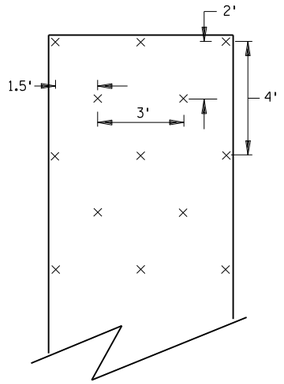
SHEET NO. 21 OF 62 SHEETS

DISTRICT *:
IPLOT NAME: $$@PLOT$NAME@$$
PATH & FILENAME: P:\002-652-006 Cloud Drive Signal\Plan\002652006_STDI.dgn
PLOTTED/REVISED: 12/09/2022



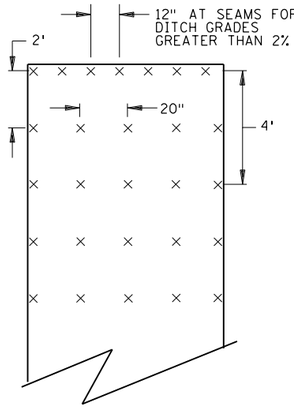
SLOPES FLATTER THAN 1:2

120 STAPLES PER 100 SQ YD



SLOPES 1:2 TO 1:1

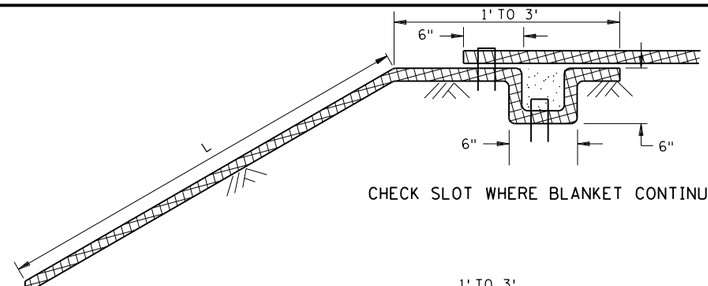
170 STAPLES PER 100 SQ YD



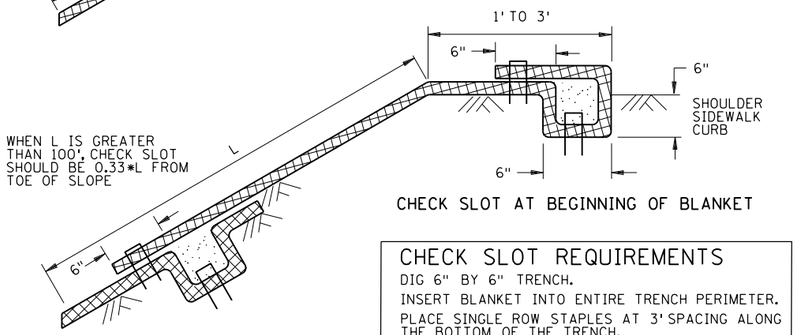
CHANNEL AND DITCH APPLICATIONS

350 STAPLES PER 100 SQ YD

BLANKET STAPLE PATTERN



CHECK SLOT WHERE BLANKET CONTINUES



CHECK SLOT AT BEGINNING OF BLANKET

CHECK SLOT REQUIREMENTS

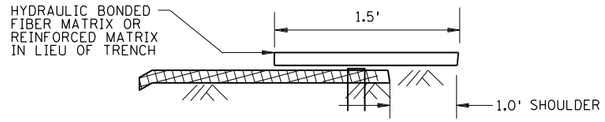
DIG 6" BY 6" TRENCH.

INSERT BLANKET INTO ENTIRE TRENCH PERIMETER.

PLACE SINGLE ROW STAPLES AT 3' SPACING ALONG THE BOTTOM OF THE TRENCH.

BACKFILL TRENCH WITH SOIL AND TAMP.

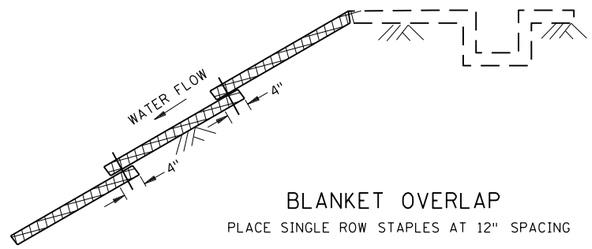
PLACE SINGLE ROW STAPLES AT 3' SPACING ON OVERLAP.



CHECK SLOT ALTERNATIVE

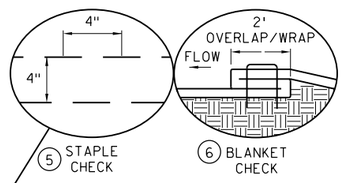
PLACE SINGLE ROW STAPLES AT 12" SPACING

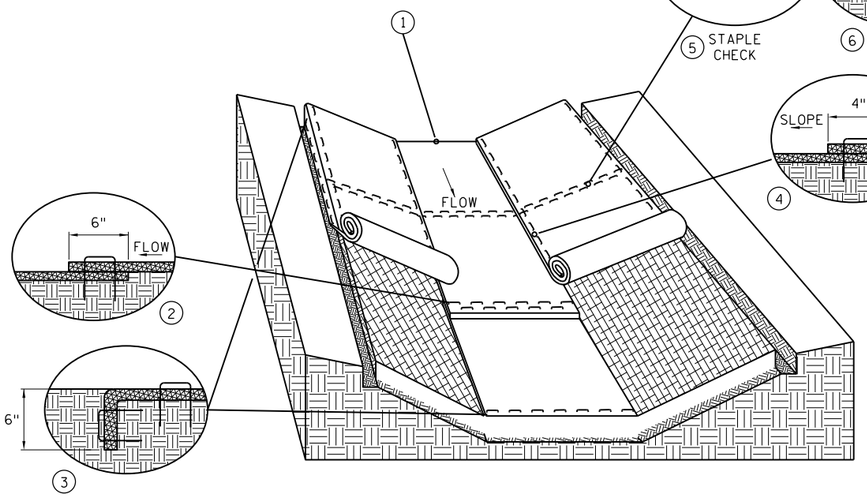
CHECK SLOT DETAILS



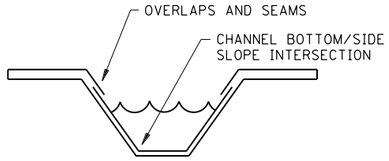
BLANKET OVERLAP

PLACE SINGLE ROW STAPLES AT 12" SPACING





DITCH BLANKET STAPLE DETAIL



DITCH BLANKET CRITICAL POINTS (7)

NOTES:

(1) USE CHECK SLOT DETAIL (NO ALTERNATES).

(2) PLACE DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER.

(3) USE 6" X 6" TRENCH TO PLACE BLANKET. PLACE SINGLE ROW OF STAPLES ON TOP AND TRENCH SIDES AT 12" SPACING. BACKFILL TRENCH WITH SOIL AND TAMP.

(4) PLACE SINGLE ROW OF STAPLES AT 12" SPACING.

(5) USE STAPLE CHECK FOR CHANNEL SLOPES LESS THAN 2.5% GRADE AT 100' INTERVALS. PLACE DOUBLE ROW OF STAPLES STAGGERED 4" APART AND AT 4" SPACING.

(6) USE BLANKET CHECKS FOR THE FOLLOWING SLOPES:
2.5%-3% 100' INTERVALS
3%-5% 50' INTERVALS
5%-7% 25' INTERVALS

(7) CRITICAL POINTS SHALL BE SECURED WITH PROPER STAPLE PATTERNS.

GENERAL BLANKET INSTALLATION REQUIREMENTS

REPP = ROLLED EROSION PREVENTION PRODUCT.

PREPARE SOIL AS PER SPECIFICATION 2574.

LAY PARALLEL OR PERPENDICULAR TO THE DIRECTION OF WATER FLOW.

OVERLAP ADJACENT STRIP EDGES A MINIMUM OF 4".

OVERLAP BLANKET 6" (MINIMUM) AT EACH END. OVERLAP BOTTOM END OF UPPER BLANKET OVER TOP END OF LOWER BLANKET. STAPLE ALONG OVERLAP EVERY 1.5'.

THE UPPERMOST BLANKET OF ALL SLOPE APPLICATIONS MUST START IN A CHECK SLOT. IF SLOPE LENGTH (L) IS 100' OR GREATER, INSERT BLANKET INTO A CHECK SLOT ⅓ FROM THE BOTTOM OF THE SLOPE.

PLOTTED/REVISED: 12/09/2022

DISTRICT *:
PLOT NAME: $$@PLOT$NAME@$$
PATH & FILENAME: P:\002-652-006 Cloud Drive Signal\Plan\002652006_STDI.dgn

REVISION:

APPROVED: JANUARY 8, 2020

MARNI KARNOWSKI
CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

THOMAS STYRBICKI
STATE DESIGN ENGINEER

STANDARD PLAN 5-297.404 | 3 OF 3

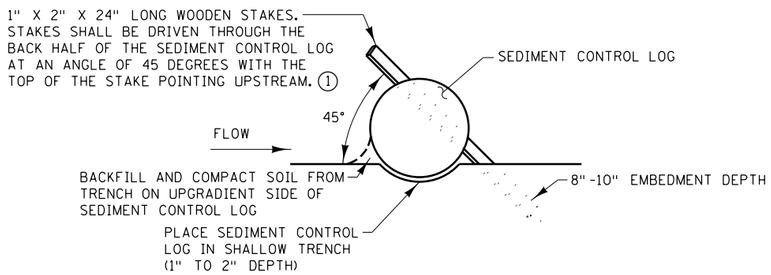
APPROVED: 1-8-2020
REVISED:

PERMANENT EROSION CONTROL

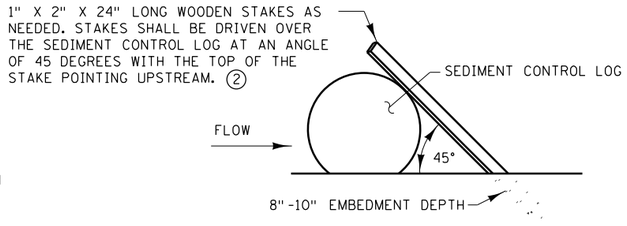
REPP (BLANKET) STAPLE PATTERN FOR SLOPES

STATE PROJ. NO. SAP 002-652-006 (T.H.) SAP 106-020-038

SHEET NO. 22 OF 62 SHEETS

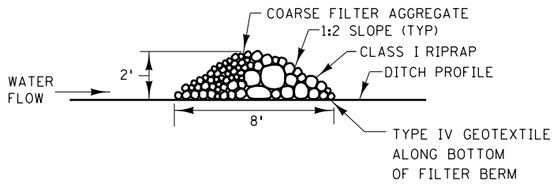


TYPES: STRAW, WOOD FIBER, OR COIR

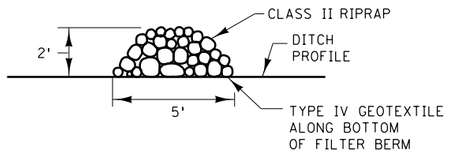


TYPES: WOOD CHIP, COMPOST, OR ROCK

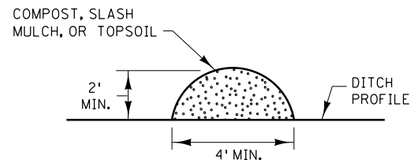
SEDIMENT CONTROL LOGS



TYPE 3 (ROCK WEEPER)

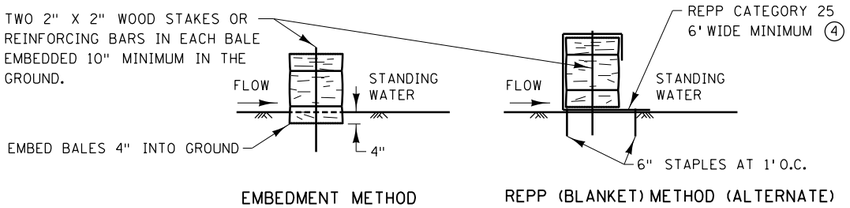


TYPE 5 (ROCK)



TYPE 1 (COMPOST), TYPE 2 (SLASH MULCH), OR TYPE 4 (TOPSOIL)

FILTER BERMS



EMBEDMENT METHOD

REPP (BLANKET) METHOD (ALTERNATE)

BALE BARRIERS (3)

NOTES:

REPP = ROLLED EROSION PREVENTION PRODUCT.

SEE SPECS. 2573, 3149, 3874, 3882, 3885, 3886, AND 3897.

(1) SPACE BETWEEN STAKES SHALL BE A MAXIMUM OF 1' FOR DITCH CHECKS OR 2' FOR OTHER APPLICATIONS.

(2) PLACE STAKES AS NEEDED TO PREVENT MOVEMENT OF SEDIMENT CONTROL LOGS PLACED ON SLOPES OR AS NEEDED DUE TO OTHER FACTORS. STAKES SHALL BE INCIDENTAL.

(3) TO BE USED FOR CRITICAL PERIMETER CONTROL AREAS WHERE STANDING WATER OCCURS (6" MAXIMUM DEPTH). BALES SHALL CONSIST OF TYPE 1 MULCH OF APPROXIMATELY 14" X 18" X 36" LONG. BALES SHALL BE PLACED ON EDGE AND BUTTED TIGHT TO ADJACENT BALES.

(4) INSTEAD OF TRENCHING, PLACE BALE ON THE REPP (BLANKET) AND WRAP BLANKET AROUND THE BALE. PLACE STAKE THROUGH BALE AND BLANKET.

REVISION:

APPROVED: JANUARY 8, 2020
MARNI KARNOWSKI
CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.405 | 2 OF 8

APPROVED: 1-8-2020
REVISED:

THOMAS STYRBICKI
STATE DESIGN ENGINEER

TEMPORARY SEDIMENT CONTROL

FILTER BERMS, SEDIMENT CONTROL LOGS, AND BALE BARRIERS

STATE PROJ. NO. SAP 002-652-006 (T.H.) SAP 106-020-038

SHEET NO. 23 OF 62 SHEETS

PLOTTED/REVISED: 12/09/2022
DISTRICT *:
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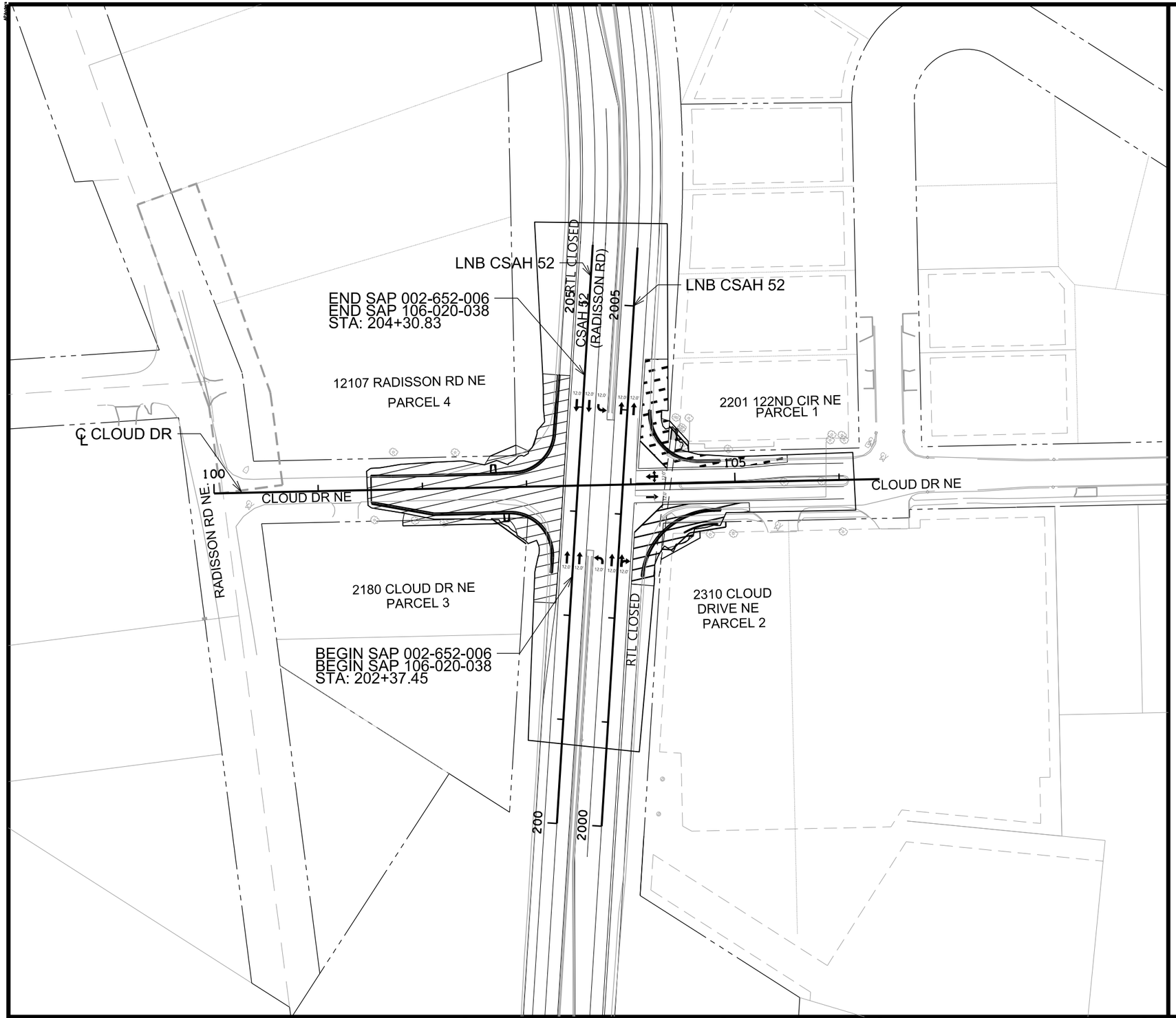


LEGEND

- CONSTRUCTION AREA
- CULVERT WORK

STAGE 1 NARRATIVE

FULL CLOSURE ON CLOUD DRIVE WEST OF CSAH 52
LOCAL TRAFFIC DETOURED.

STAGE 1 CONSTRUCTION NOTES:
- REMOVE EXISTING BITUMINOUS ON ALL QUADRANT RADII
- MILL EXISTING BITUMINOUS ON WEST LEG OF INTERSECTION
- CONSTRUCT EAST BOUND RIGHT TURN LANE
- EXTEND EXISTING PIPE CULVERT ON NE QUADRANT
- CONSTRUCT RADII AT ALL QUADRANTS OF INTERSECTION
- POUR PED RAMPS AND SIDEWALKS

STAGE 1 TRAFFIC CONTROL NOTES:
MAINTAIN MINIMUM 12' LANES ON THE EAST LEG OF THE INTERSECTION
CSAH 52 NORTHBOUND AND SOUTHBOUND RIGHT TURN LANES CLOSED
SEE TRAFFIC CONTROL PLANS FOR MORE INFORMATION

N

0 100
SCALE IN FEET

1 OF 2

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\002-652-006 Cloud Drive Signal\Plan\002652006_STG1_P1.dgn 12/13/2022 12:52:14 PM

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

PRINT NAME: JORGE R. BERNAL DELGADO
SIGNATURE:
DATE: 12-13-22 LICENSE NO. 57216

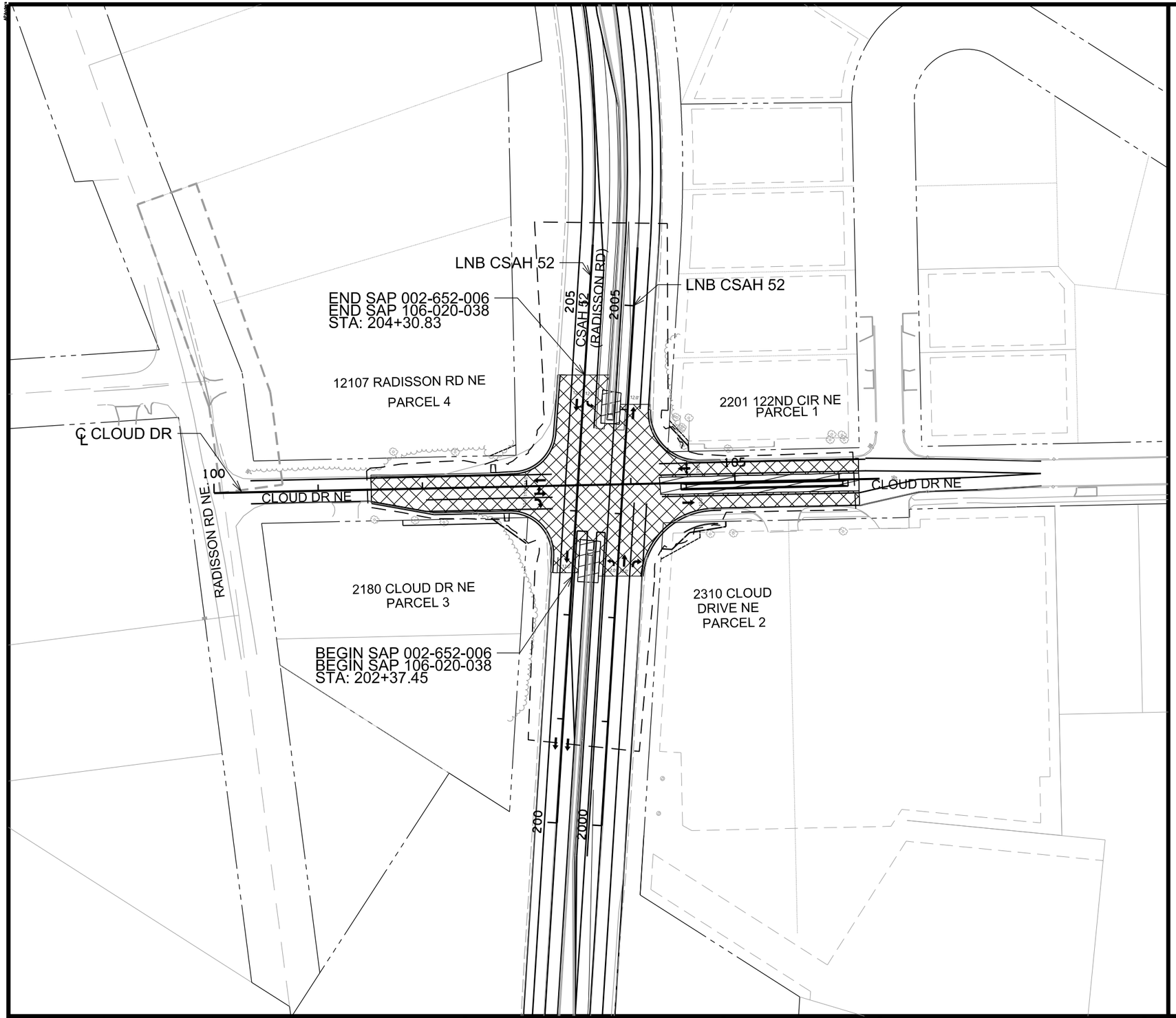
DRAWN BY APA DATE 12/09/22
DESIGN BY JRB DATE 12/09/22
CHECKED BY NJD DATE 12/09/22

ANOKA COUNTY
HIGHWAY DEPT.

SAP 002-652-006
SAP 106-020-038

STAGING PLAN
STAGE 1

Sheet 24 of 62 Sheets



LEGEND

- CONSTRUCTION AREA
- WORK UNDER TRAFFIC

STAGE 2 NARRATIVE

LANE CLOSURES PER MNDOT FIELD MANUAL ON NB-SB CSAH 52 LANES FOR CONCRETE MEDIAN WORK POUR CONCRETE MEDIAN AND NOSES ON EAST LEG OF CLOUD DRIVE AND CSAH 52 PLACE FINAL LIFT OF BITUMIINOUS ON EAST AND WEST LEG OF CLOUD DRIVE.

CONSTRUCTION NOTES
MAINTAIN MINIMUM 12' WIDE LANES ON THE EAST LEG OF THE INTERSECTION. LANE CLOSURES ON CSAH 52 SHOULD NOT OCCUR CONCURRENTLY TO MINIMIZE TRAFFIC DISRUPTIONS

0 100
SCALE IN FEET

2 OF 2

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\002-652-006 Cloud Drive Signal\Plan\002652006_STG2_P1.dgn 12/09/2022 10:31:25 AM

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

PRINT NAME: JORGE R. BERNAL DELGADO

SIGNATURE:

DATE: 12-9-22 LICENSE NO. 57216

DRAWN BY APA DATE 12/09/22

DESIGN BY JRB DATE 12/09/22

CHECKED BY NJD DATE 12/09/22

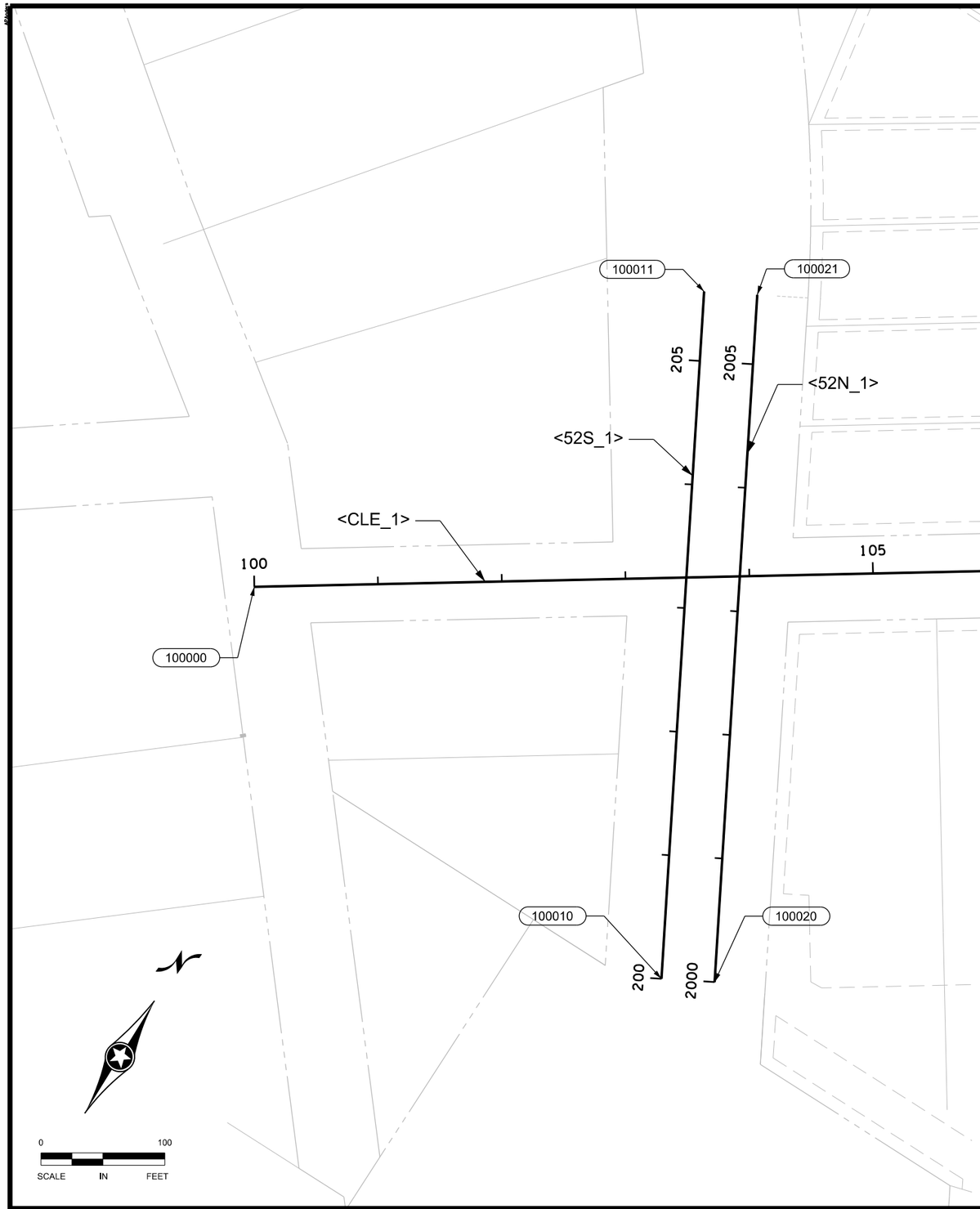
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

SAP 002-652-006
SAP 106-020-038

STAGING PLAN
STAGE 2

Sheet 25 of 62 Sheets



ALIGNMENT TABULATION

POINT NUMBER	POINT	STATION	CIRCULAR CURVE DATA					COORDINATES		AZIMUTH
			DELTA	DEGREE	RADIUS	TANGENT	LENGTH	E	N	
℄ CLOUD DRIVE NE <CLE_1>										
100000	POT	100+00.000						513,167.7393	156,491.6848	
100001	POT	106+38.705						513,700.9392	156,843.3120	
℄ C.S.A.H. 52 NORTHBOUND <52N_1>										
100020	POT	2000+00.000						513,652.5050	156,419.3958	
100021	POT	2005+56.185						513,386.1859	156,907.6739	
℄ C.S.A.H. 52 SOUTHBOUND <52S_1>										
100010	POT	200+00.000						513,614.7549	156,398.8059	
100011	POT	205+56.185						513,348.4359	156,887.0839	

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\002-652-006 Cloud Drive Signal\Plan\002652006_AL1_P1.dgn 12/09/2022 10:31:27 AM

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

PRINT NAME: JORGE R. BERNAL DELGADO

SIGNATURE:

DATE: 12-9-22 LICENSE NO. 57216

DRAWN BY APA DATE 12/09/22

DESIGN BY JRB DATE 12/09/22

CHECKED BY NJD DATE 12/09/22

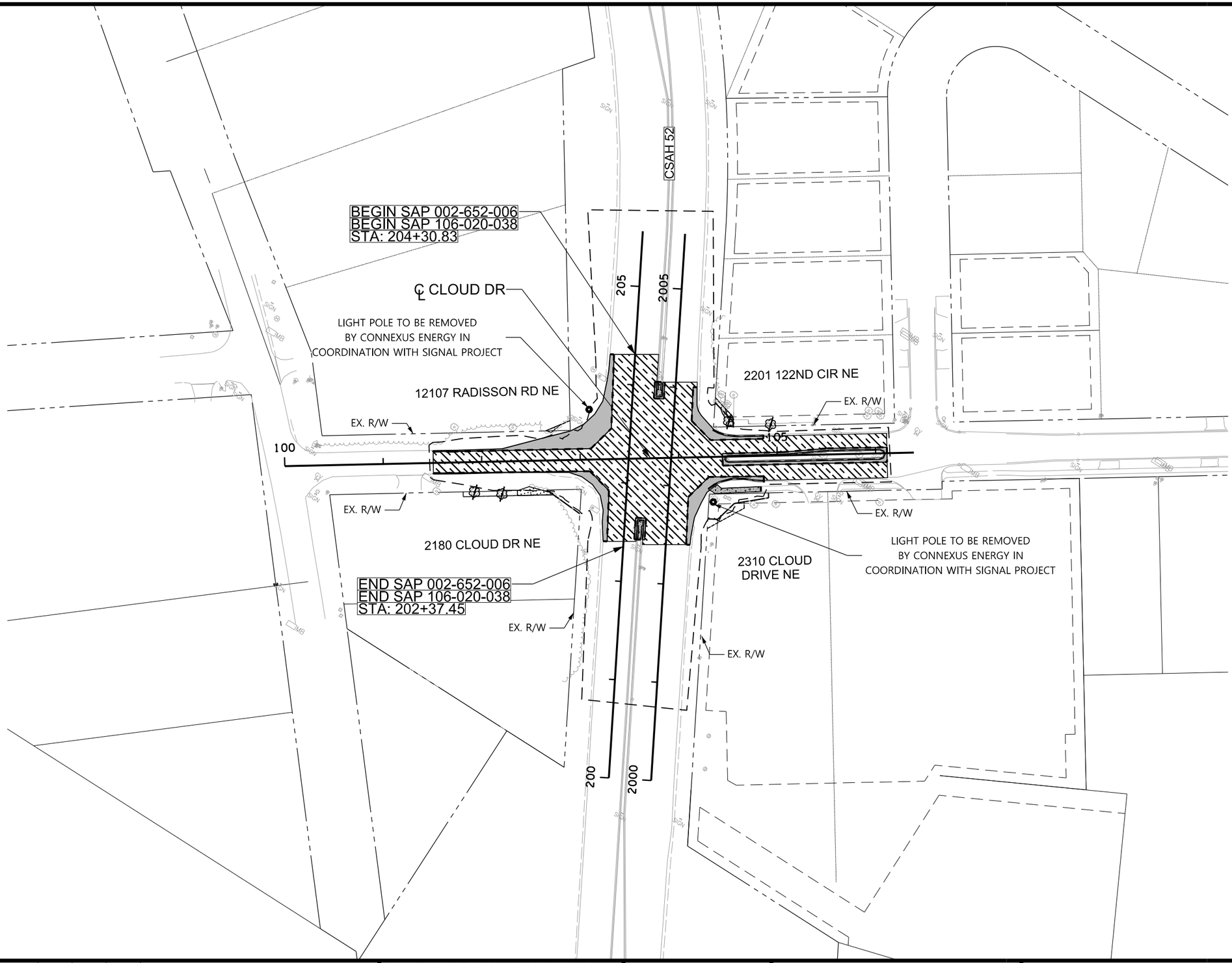
ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

SAP 002-652-006
SAP 106-020-038

ALIGNMENT PLAN AND TABULATION

Sheet 26 of 62 Sheets



LEGEND

- REMOVE BITUMINOUS PAVEMENT
- REMOVE CONCRETE PAVEMENT
- MILL AND OVERLAY BITUMINOUS PAVEMENT
- CLEAR & GRUB (ACRE)
- REMOVE CURB AND GUTTER
- TREE REMOVAL BY EACH
- SAWING BITUMINOUS/ CONCRETE PAVEMENT
- CONSTRUCTION LIMIT
- PROPOSED R/W
- TEMPORARY EASEMENT
- PERMANENT EASEMENT

REMOVAL NOTES:

THE CONTRACTOR SHALL PERFORM ALL CLEARING AND GRUBBING AS DIRECTED AND MARKED IN THE FIELD BY THE ENGINEER. THE CONTRACTOR SHALL OTHERWISE PROTECT ALL EXISTING TREES NOT SPECIFICALLY MARKED FOR REMOVAL.

ALL PRIVATE UTILITIES TO BE RELOCATED BY OTHERS AS REQUIRED. SEE INPLACE UTILITY TABULATION FOR MORE INFORMATION.

ALL ROADWAY SIGNS WITHIN THE CONSTRUCTION LIMITS AND CONFLICTING SIGNS SHALL BE SALVAGED BY THE CONTRACTOR.

0 100
SCALE IN FEET

1 OF 1

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\002-652-006 Cloud Drive Signal\Plan\002652006_RM1_P1.dgn 12/09/2022 10:31:52 AM

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

PRINT NAME: JORGE R. BERNAOLDELGADO

SIGNATURE:

DATE: 12-9-22 LICENSE NO. 57216

DRAWN BY APA DATE 12/09/22

DESIGN BY JRB DATE 12/09/22

CHECKED BY NJD DATE 12/09/22

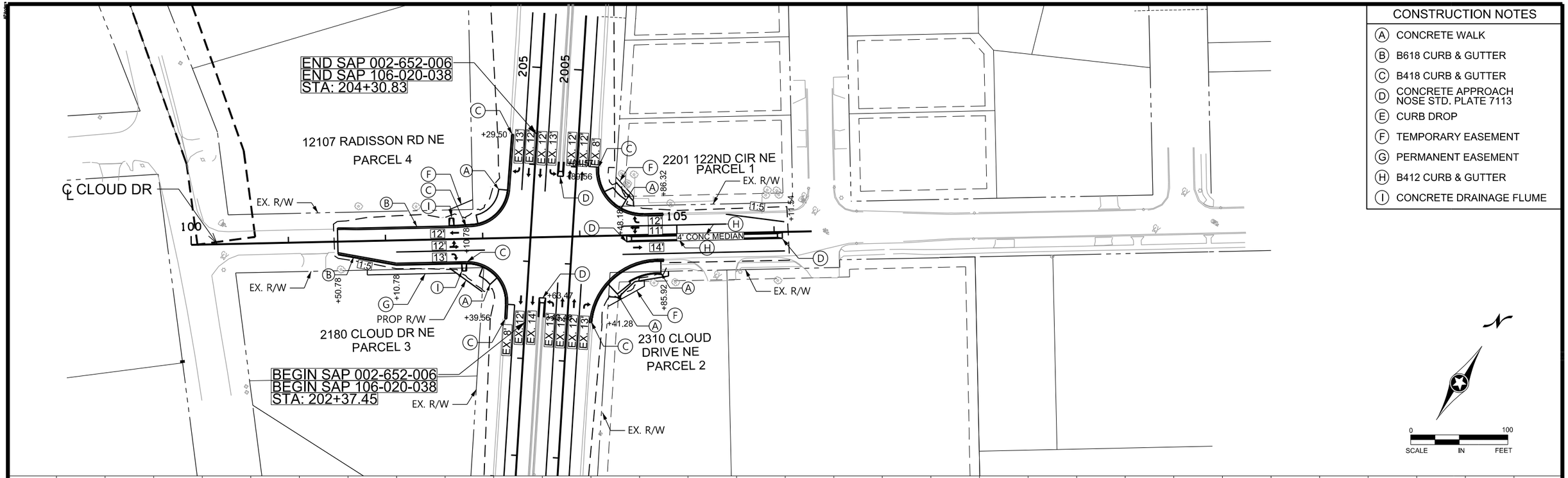
ANOKA COUNTY HIGHWAY DEPT.

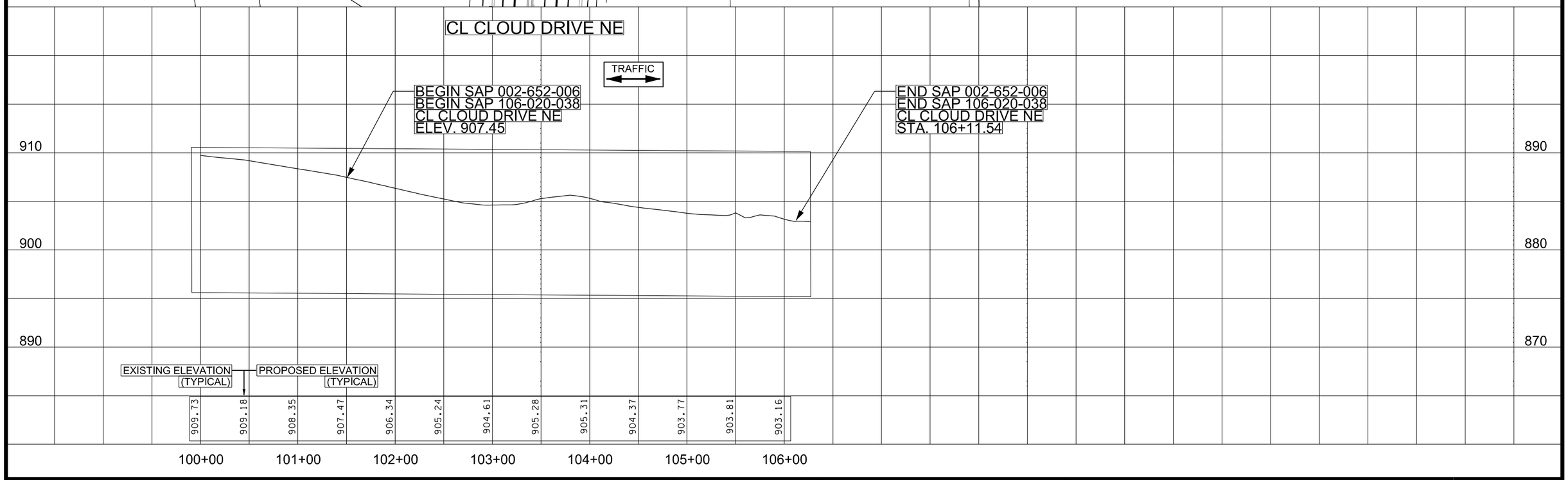
SAP 002-652-006
SAP 106-020-038

REMOVAL PLANS

STA 101+50.78 TO 106+11.54

Sheet 27 of 62 Sheets





NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\002-652-006 Cloud Drive Signal\Plan\002652006_PP1_P1.dgn 12/09/2022 10:48:49 AM

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

PRINT NAME: JORGE R. BERNAL-DELGADO

SIGNATURE:

DATE: 12-9-22 LICENSE NO. 57216

DRAWN BY APA DATE 12/09/22

DESIGN BY JRB DATE 12/09/22

CHECKED BY NJD DATE 12/09/22

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

SAP 002-652-006
SAP 106-020-038

CONSTRUCTION PLAN AND PROFILE

Sheet 28 of 62 Sheets

POINT TABLE

POINT #	RAW DESCRIPTION	ELEVATION	NORTHING	EASTING
1	PUSH BUTTON	904.62	156706.182	513409.486
2	LANDING	905.04	156705.813	513411.670
3	LANDING	905.02	156700.764	513412.888
4	LANDING	905.09	156699.908	513407.961
5	LANDING	905.12	156704.782	513406.761
6	LANDING	904.98	156683.325	513406.007
7	LANDING	904.91	156681.318	513410.591
8	LANDING	904.87	156675.509	513407.480
9	LANDING	904.94	156678.196	513403.290
10	SIGNAL POLE	904.53	156675.668	513405.192
11	PUSH BUTTON	903.34	156626.317	513436.008
12	LANDING	904.33	156628.909	513446.187
13	LANDING	904.43	156621.997	513445.070
14	LANDING	904.29	156622.367	513436.758
15	LANDING	904.19	156629.370	513436.314
16	SIGNAL POLE	903.45	156624.833	513446.189
17	PUSH BUTTON	903.81	156686.672	513558.767
18	LANDING	904.30	156695.245	513570.237
19	LANDING	904.36	156685.187	513566.868
20	LANDING	904.20	156687.175	513556.535
21	LANDING	904.14	156699.075	513560.156
22	SIGNAL POLE	904.24	156695.362	513565.596
23	PUSH BUTTON	904.71	156765.032	513520.470
24	LANDING	904.77	156769.024	513520.119
25	LANDING	904.67	156762.024	513520.176
26	LANDING	904.85	156763.777	513507.742
27	LANDING	904.96	156770.488	513509.736
28	SIGNAL POLE	904.94	156768.102	513507.349

SEE REMOVALS SHEET FOR ESTIMATED QUANTITIES BY QUADRANT

NOTE:

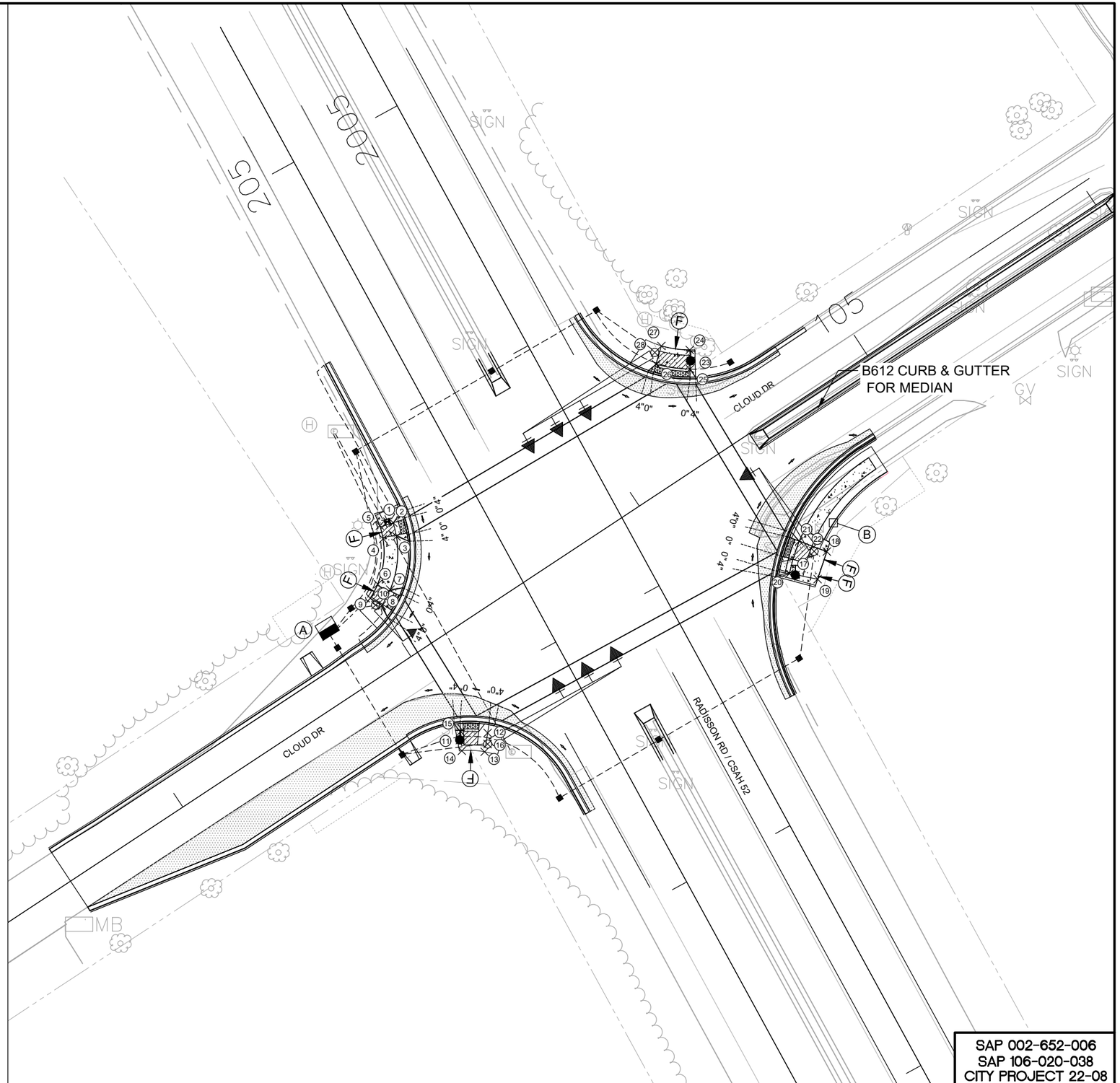
1. LANDINGS - AN INITIAL LANDING IS THE FIRST REQUIRED LANDINGOF A PEDESTRIAN RAMP. ALL INITIAL LANDINGS REQUIRED AT THE TOP OF A RAMPED SLOPED SURFACE (>2% LONGITUDINAL SLOPE), SHALL BE FORMED AND PLACED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. THIS DOES NOT INCLUDE INITIAL LANDINGS PLACED AT ROADWAY GRADE SUCH AS DEPRESSED CORNERS, PARALLEL RAMPS, OR RURAL FLAT LANDINGS. SECONDARY LANDINGS CONSIST OF ALL LANDINGS BEYOND THE INITIAL LANDING. THESE SECONDARY LANDINGS DO NOT REQUIRE A SEPARATE LANDING POUR, ALL LANDINGS ADJACENT TO PUSH BUTTONS SHALL BE FORMED AND PLACED SEPARATELY IN AN INDEPENDENT CONCRETE POUR, REGARDLESS OF RAMP TYPE.

N

20 0 20 40
scale 10 feet

LEGEND

- LAND AREA- 4'X4' MIN. DIMS. MAX 2.0% SLOPE IN ALL DIRECTIONS
- TRUNCATED DOMES, SEE STANDARD PLATE 7038
- CONCRETE SIDEWALK/PAVEMENT
- BITUMINOUS PAVEMENT
- B418 CURB AND GUTTER
- (1) FLOWLINE CONTROL POINTS
- (S) INDICATES PEDESTRIAN RAMP- SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
- (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%
- DRAINAGE FLOW ARROW
- PUSH BUTTON STATION
- PROPOSED SIGNAL POLE



SAP 002-652-006
SAP 106-020-038
CITY PROJECT 22-08

Save: 12/9/2022 9:34 AM gwilber Plot: 12/9/2022 9:35 AM S:\AE\AA\Anoka\Common\signals\52-Cloud\2021 Design\cad\dwg\sheets\AC163661_INT.dwg

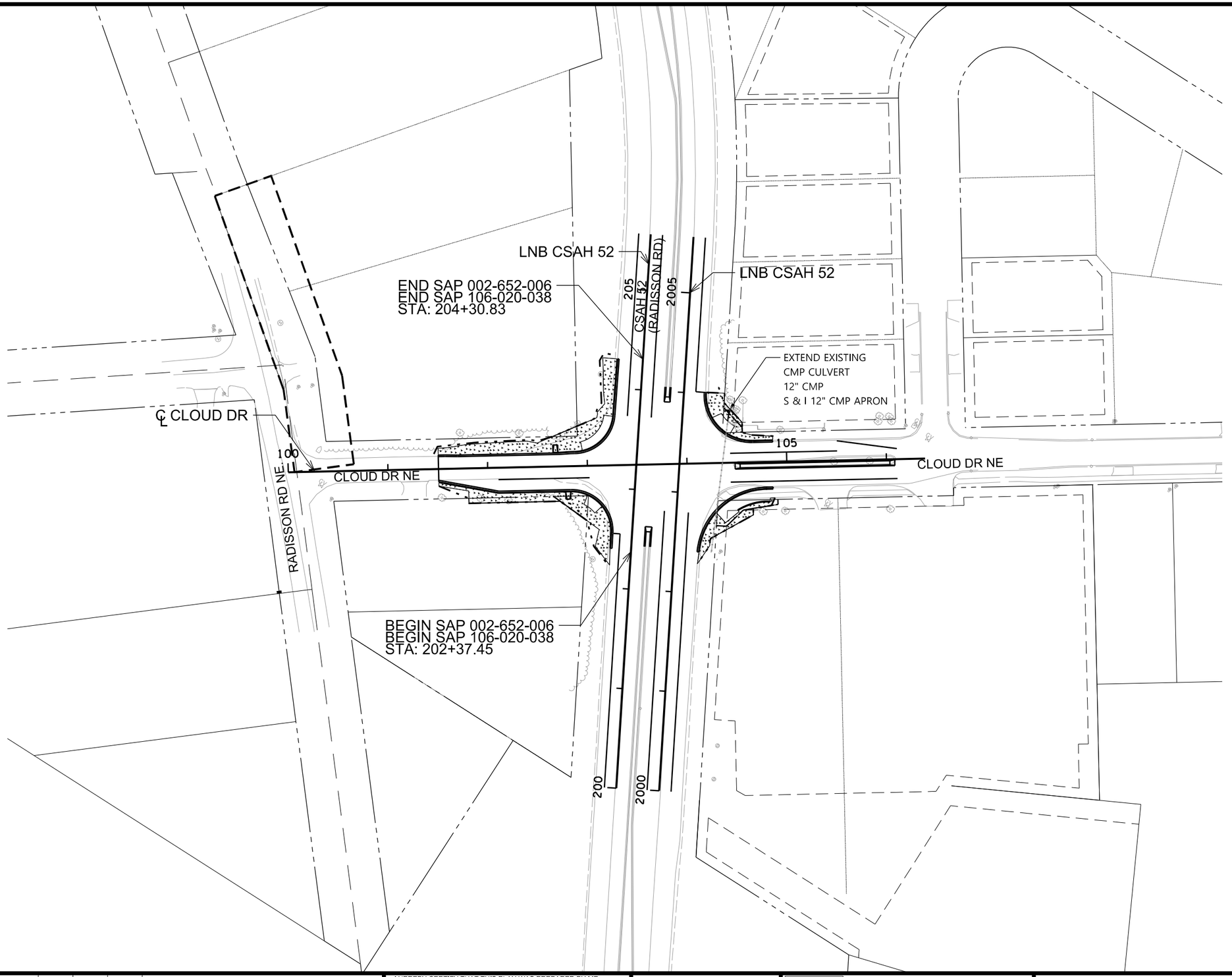
SEH Project	ANOKC 163661	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	SEH	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
Drawn By	JMG								Date: November 17, 2022
Designed By	JMG								Name: John M. Gray, PE
Checked By	JMG								Lic. No. 22457

CSAH 52 AT CLOUD DRIVE NE

ANOKA COUNTY, MINNESOTA
CITY OF BLAINE

CURB RAMP INTERSECTION DETAILS

CSAH 52 (RADISSON RD NE) AT CLOUD DR NE



LEGEND

- SEEDING MIX 1
- BIOLOG
- PROPOSED STORM SEWER
- INPLACE STORM SEWER
- INLET PROTECTION
- PROPOSED APRON

NOTES

1. SILT FENCE SHALL FOLLOW A SINGLE CONTOUR AS CLOSELY AS POSSIBLE .
2. SILT FENCE SHALL BE CLEANED OUT OR REPLACED WHEN SEDIMENT REACHES 8" OR $\frac{1}{3}$ OF SILT FENCE HEIGHT.
3. WHEN SEDIMENT DEPOSITS IN A WATER OF THE STATE, THE MATERIAL MUST BE REMOVED WITHIN 7 DAYS.
4. IF SILT DEPOSITS IN THE ANOKA COUNTY RIGHT-OF-WAY, THE CONTRACTOR IS RESPONSIBLE FOR ITS REMOVAL.
5. ALL GRADED AREAS ARE TO BE REVEGETATED WITHIN 14 DAYS OF THE COMPLETION OF GRADING.

0 100
SCALE IN FEET

1 OF 1

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\002-652-006 Cloud Drive Signal\Plan\002652006_DR-EC1_P1.dgn 12/09/2022 10:32:01 AM

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

PRINT NAME: JORGE R. BERNAL DELGADO

SIGNATURE:

DATE: 12-9-22 LICENSE NO. 57216

DRAWN BY APA DATE 12/09/22

DESIGN BY JRB DATE 12/09/22

CHECKED BY NJD DATE 12/09/22

ANOKA COUNTY

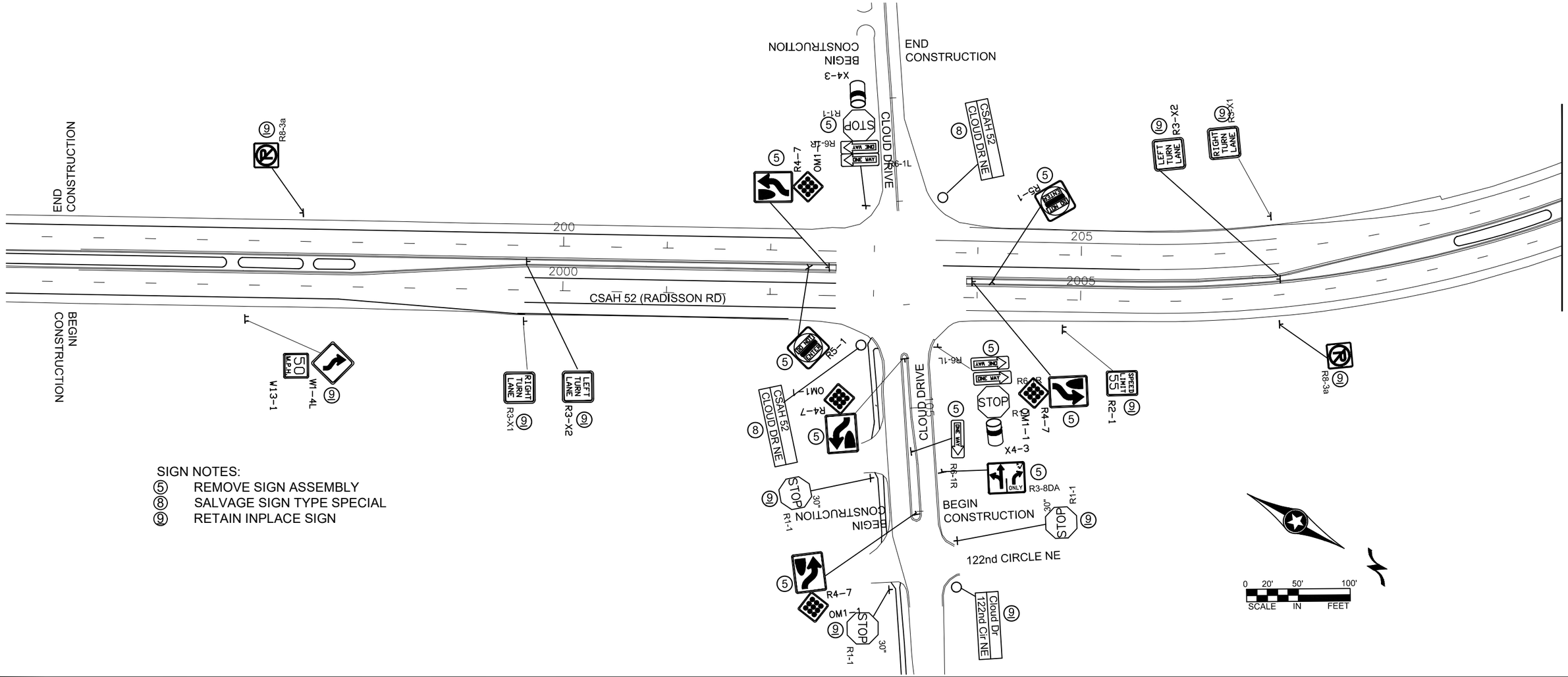
ANOKA COUNTY HIGHWAY DEPT.

SAP 002-652-006
SAP 106-020-038

EROSION CONTROL PLANS

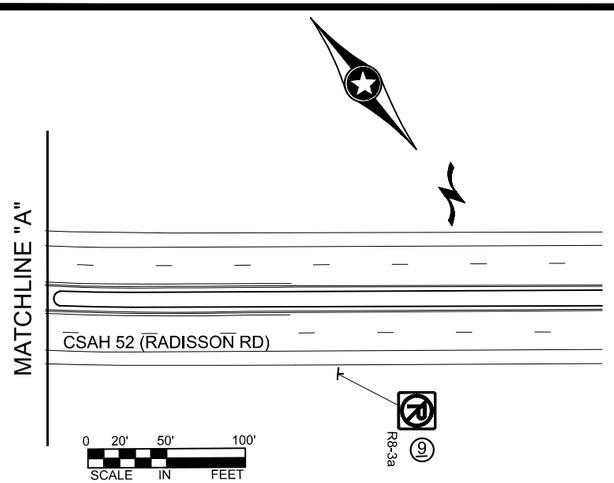
STA 101+50.78 TO 106+11.54

Sheet 30 of 62 Sheets



SIGN NOTES:

⑤ REMOVE SIGN ASSEMBLY
⑧ SALVAGE SIGN TYPE SPECIAL
⑨ RETAIN INPLACE SIGN



NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\002-652-006\Base\Traffic\Existing Signing & Striping.dwg

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

PRINT NAME: JORGE R. BERNAL DELGADO DATE: 12-9-22

SIGNATURE: _____ LICENSE NO. 57216

DRAWN BY TMV DATE 08/23/22

DESIGN BY _____ DATE _____

CHECKED BY SRT DATE 10/17/22

ANOKA COUNTY HIGHWAY DEPT.

SAP 002-652-006
SAP 106-020-038

EXISTING SIGNING & STRIPING

SHEET 31 OF 62 SHEETS

EXISTING SIGN TAB

STATION	ADDRESS/ DESCRIPTION (NOTES)	REMOVE SIGN TYPE C	SIGN TYPE SPECIAL	SIGN NUMBER	SIGN LEGEND
		EACH	EACH		
CSAH 52 (RADISSON RD)					
202+40	MEDIAN	1		R5-1	DO NOT ENTER
202+60	MEDIAN	1		R4-7	KEEP RIGHT
				OM1-1	9-BUTTON
203+90	MEDIAN	1		R4-7	KEEP RIGHT
				OM1-1	9-BUTTON
204+10	MEDIAN	1		R5-1	DO NOT ENTER
CLOUD DRIVE					
103+00	RT	1		R6-1	ONE WAY
				R6-1	ONE WAY
				R1-1	STOP
				X4-3	DELINEATOR
103+00	LT		1		STREET SIGN
104+40	LT	1		R6-1	ONE WAY
				R6-1	ONE WAY
				R1-1	STOP
				X4-3	DELINEATOR
104+40	RT		1		STREET SIGN
104+50	MEDIAN	1		R4-7	KEEP RIGHT
				OM1-1	9-BUTTON
105+40	MEDIAN	1		R6-1	ONE WAY
105+60	LT	1		R3-8DA	LN DESIGNATION
106+00	MEDIAN	1		R4-7	KEEP RIGHT
				OM1-1	9-BUTTON
	TOTAL	10	2		

CONSTRUCTION NOTES:

1. SIGN TYPE SPECIAL ARE TO REMAIN VISIBLE AT ALL TIMES. SHALL BE PAID BY THE EACH, WHEN RELOCATION IS REQUIRED.

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\002-652-006\Base\Traffic\Existing Signing & Striping.dwg

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PRINT NAME: JORGE R. BERNAL DELGADO DATE: 12-9-22

SIGNATURE: _____ LICENSE NO. 57216

DRAWN BY TMV DATE 08/23/22

DESIGN BY _____ DATE _____

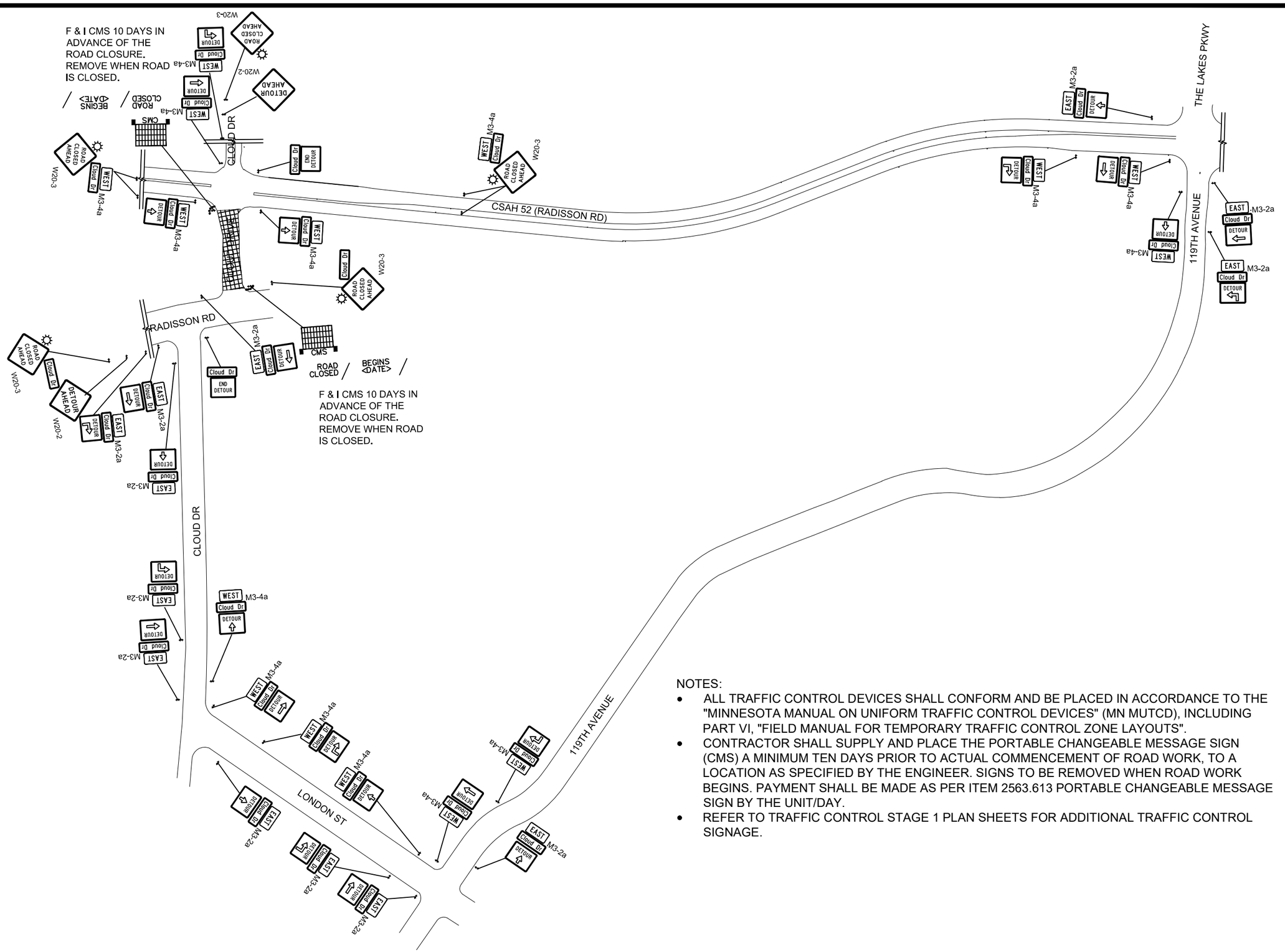
CHECKED BY SRT DATE 10/17/22

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

SAP 002-652-006
SAP 106-020-038

EXISTING SIGN REMOVAL QUANTITIES



DRAWING NOT TO SCALE

NOTES:

- ALL TRAFFIC CONTROL DEVICES SHALL CONFORM AND BE PLACED IN ACCORDANCE TO THE "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MN MUTCD), INCLUDING PART VI, "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS".
- CONTRACTOR SHALL SUPPLY AND PLACE THE PORTABLE CHANGEABLE MESSAGE SIGN (CMS) A MINIMUM TEN DAYS PRIOR TO ACTUAL COMMENCEMENT OF ROAD WORK, TO A LOCATION AS SPECIFIED BY THE ENGINEER. SIGNS TO BE REMOVED WHEN ROAD WORK BEGINS. PAYMENT SHALL BE MADE AS PER ITEM 2563.613 PORTABLE CHANGEABLE MESSAGE SIGN BY THE UNIT/DAY.
- REFER TO TRAFFIC CONTROL STAGE 1 PLAN SHEETS FOR ADDITIONAL TRAFFIC CONTROL SIGNAGE.

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\002-652-006\Base\Traffic\Detour - W Leg Cloud Dr.dwg

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

PRINT NAME: JORGE R. BERNAL DELGADO DATE: 12-9-22

SIGNATURE: _____ LICENSE NO. 57216

DRAWN BY TMV DATE 09/08/22

DESIGN BY _____ DATE _____

CHECKED BY SRT DATE 10/17/22

ANOKA COUNTY HIGHWAY DEPT.

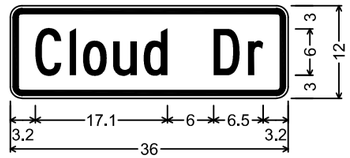
SAP 002-652-006
SAP 106-020-038

DETOUR
CLOUD DRIVE

SHEET 33 OF 62 SHEETS

M.U.T.C.D. CODE	SIZE	INSERT	QUANTITY
W20-2	48" x 48"	DETOUR AHEAD W20-2	2
M3-4	24" x 12"	WEST	2
	36" x 12"	Cloud Dr	6
W20-3	48" x 48"	ROAD CLOSED AHEAD	7
M3-4	24" x 12"	WEST	3
	36" x 12"	Cloud Dr	3
M4-9m	30" x 24"	DETOUR ⇨	3
M3-4	24" x 12"	WEST	3
	36" x 12"	Cloud Dr	3
M4-9m	30" x 24"	DETOUR ⇨	3
M3-2	24" x 12"	WEST	1
	36" x 12"	Cloud Dr	1
M4-9m	30" x 24"	DETOUR ⇦	1
M3-2	24" x 12"	WEST	1
	36" x 12"	Cloud Dr	1
M4-9m	30" x 24"	DETOUR ⇦	1
M3-4	24" x 12"	WEST	5
	36" x 12"	Cloud Dr	5
M4-9m	30" x 24"	DETOUR ⇧	5

M.U.T.C.D. CODE	SIZE	INSERT	QUANTITY
M3-2	24" x 12"	EAST	1
	36" x 12"	Cloud Dr	1
M4-9m	30" x 24"	DETOUR ⇨	1
M3-2	24" x 12"	EAST	1
	36" x 12"	Cloud Dr	1
M4-9m	30" x 24"	DETOUR ⇨	1
M3-2	24" x 12"	EAST	4
	36" x 12"	Cloud Dr	4
M4-9m	30" x 24"	DETOUR ⇦	4
M3-2	24" x 12"	EAST	3
	36" x 12"	Cloud Dr	3
M4-9m	30" x 24"	DETOUR ⇦	3
M3-2	24" x 12"	EAST	4
	36" x 12"	Cloud Dr	4
M4-9m	30" x 24"	DETOUR ⇧	4
	36" x 12"	Cloud Dr	2
M4-8a	30" x 24"	END DETOUR	2
CMS sign to be installed a minimum of ten days prior to actual commencement of road closure. Signs to be removed when road closure begins.		CMS	2 10 DAYS EACH



DETOUR;
1.5" Radius, 0.6" Border, 0.4" Indent, Black on, Orange;
"Cloud Dr", C 2K;

CHANGEABLE MESSAGE BOARD - MESSAGE SEQUENCE LAYOUT

CMS SIGN TO BE PLACED A MINIMUM OF TEN DAYS PRIOR TO COMMENCEMENT OF ROAD CLOSURE. SIGNS TO BE REMOVED WHEN ROAD IS CLOSED.

		R	O	A	D		
	C	L	O	S	E	D	

	B	E	G	I	N	S	
	<	D	A	T	E	>	

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\002-652-006\Base\Traffic\Detour - W Leg Cloud Dr.dwg

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

PRINT NAME: JORGE R. BERNAL DELGADO DATE: 12-9-22

SIGNATURE: LICENSE NO. 57216

DRAWN BY TMV DATE 09/08/22

DESIGN BY DATE

CHECKED BY SRT DATE 10/17/22

ANOKA COUNTY HIGHWAY DEPT.

SAP 002-652-006
SAP 106-020-038

DETOUR
CLOUD DRIVE

SHEET 34 OF 62 SHEETS

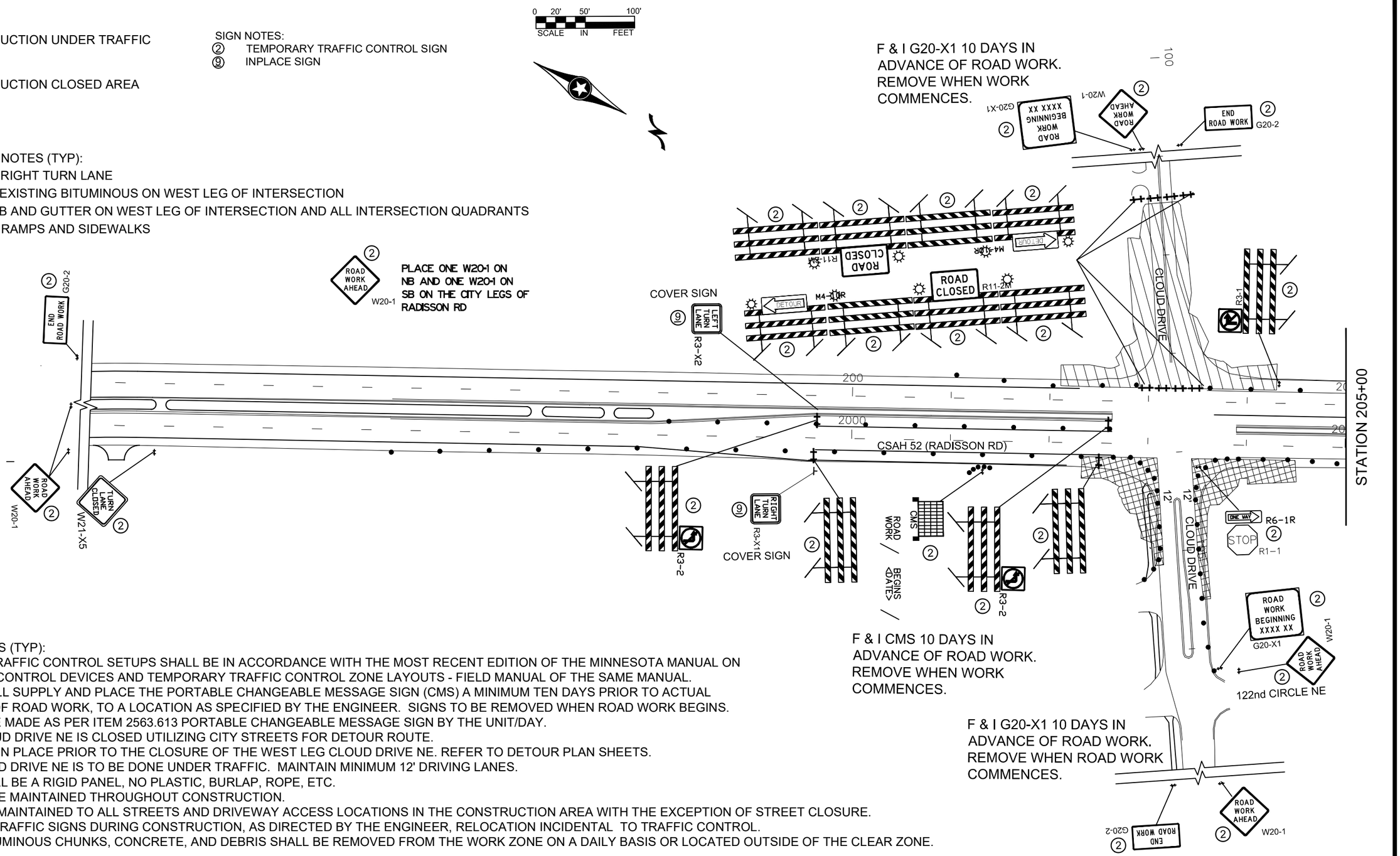
CONSTRUCTION UNDER TRAFFIC

CONSTRUCTION CLOSED AREA

SIGN NOTES:
② TEMPORARY TRAFFIC CONTROL SIGN
⑨ INPLACE SIGN

0 20' 50' 100'
SCALE IN FEET

CONSTRUCTION NOTES (TYP):
1. GRADE EB RIGHT TURN LANE
2. MILL 2" OF EXISTING BITUMINOUS ON WEST LEG OF INTERSECTION
3. POUR CURB AND GUTTER ON WEST LEG OF INTERSECTION AND ALL INTERSECTION QUADRANTS
4. POUR PED RAMPS AND SIDEWALKS



TRAFFIC CONTROL NOTES (TYP):
1. ALL TEMPORARY TRAFFIC CONTROL SETUPS SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS - FIELD MANUAL OF THE SAME MANUAL.
2. CONTRACTOR SHALL SUPPLY AND PLACE THE PORTABLE CHANGEABLE MESSAGE SIGN (CMS) A MINIMUM TEN DAYS PRIOR TO ACTUAL COMMENCEMENT OF ROAD WORK, TO A LOCATION AS SPECIFIED BY THE ENGINEER. SIGNS TO BE REMOVED WHEN ROAD WORK BEGINS. PAYMENT SHALL BE MADE AS PER ITEM 2563.613 PORTABLE CHANGEABLE MESSAGE SIGN BY THE UNIT/DAY.
3. WEST LEG OF CLOUD DRIVE NE IS CLOSED UTILIZING CITY STREETS FOR DETOUR ROUTE.
4. DETOUR SHALL BE IN PLACE PRIOR TO THE CLOSURE OF THE WEST LEG CLOUD DRIVE NE. REFER TO DETOUR PLAN SHEETS.
5. EAST LEG OF CLOUD DRIVE NE IS TO BE DONE UNDER TRAFFIC. MAINTAIN MINIMUM 12' DRIVING LANES.
6. SIGN COVERS SHALL BE A RIGID PANEL, NO PLASTIC, BURLAP, ROPE, ETC.
7. ALL SIGNS SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.
8. ACCESS SHALL BE MAINTAINED TO ALL STREETS AND DRIVEWAY ACCESS LOCATIONS IN THE CONSTRUCTION AREA WITH THE EXCEPTION OF STREET CLOSURE.
9. FOR RELOCATING TRAFFIC SIGNS DURING CONSTRUCTION, AS DIRECTED BY THE ENGINEER, RELOCATION INCIDENTAL TO TRAFFIC CONTROL.
10. PILES OF DIRT, BITUMINOUS CHUNKS, CONCRETE, AND DEBRIS SHALL BE REMOVED FROM THE WORK ZONE ON A DAILY BASIS OR LOCATED OUTSIDE OF THE CLEAR ZONE.

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\002-652-006\Base\Traffic\TC Stage 1.dwg

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

PRINT NAME: JORGE R. BERNAL DELGADO DATE: 12-9-22

SIGNATURE: _____ LICENSE NO. 57216

DRAWN BY TMV DATE 09/08/22

DESIGN BY _____ DATE _____

CHECKED BY SRT DATE 10/19/22

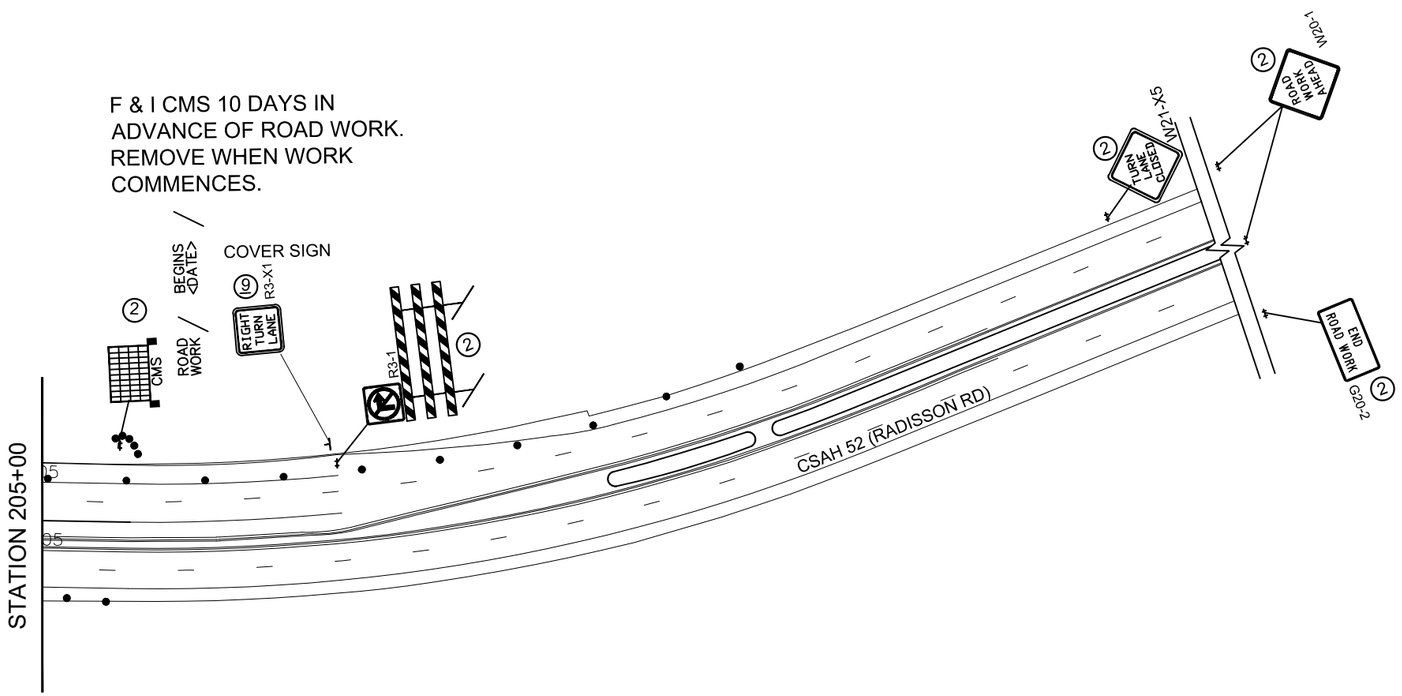
ANOKA COUNTY HIGHWAY DEPT.

SAP 002-652-006
SAP 106-020-038

TRAFFIC CONTROL
STAGE 1

SHEET 35 OF 62 SHEETS

F & I CMS 10 DAYS IN ADVANCE OF ROAD WORK. REMOVE WHEN WORK COMMENCES.



CONSTRUCTION UNDER TRAFFIC

CONSTRUCTION CLOSED AREA

SIGN NOTES:
② TEMPORARY TRAFFIC CONTROL SIGN
⑨ INPLACE SIGN

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ANOKA COUNTY HIGHWAY DEPT.

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TRAFFIC CONTROL
STAGE 1

SHEET 36 OF 62 SHEETS

CONSTRUCTION UNDER TRAFFIC

CONCRETE MEDIAN WORK

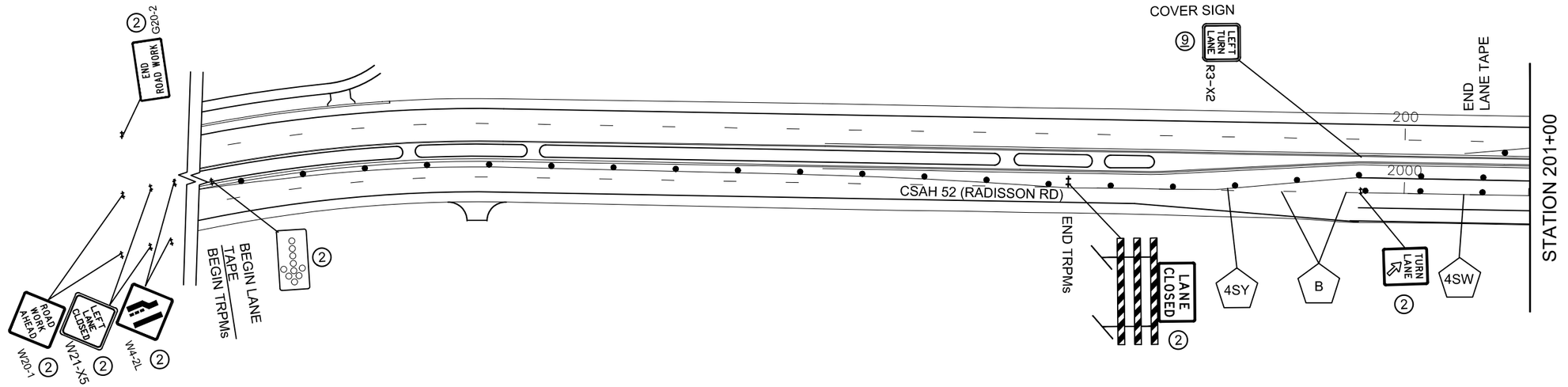
STRIPING KEY

PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING

SIGN NOTES:
② TEMPORARY TRAFFIC CONTROL SIGN
⑨ INPLACE SIGN

0 20' 50' 100'
SCALE IN FEET

CONSTRUCTION NOTES (TYP):
1. CSAH 52 MEDIAN NOSE WORK
2. POUR CONCRETE MEDIAN ON EAST LEG OF CLOUD DRIVE
3. PLACE FINAL LIFT OF BITUMINOUS ON EAST AND WEST LEG OF CLOUD DRIVE



TRAFFIC CONTROL NOTES (TYP):
1. ALL TEMPORARY TRAFFIC CONTROL SETUPS SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS - FIELD MANUAL OF THE SAME MANUAL.
2. WEST LEG OF CLOUD DRIVE NE IS OPEN TO TRAFFIC. WORK TO BE PERFORMED UNDER TRAFFIC.
3. EAST LEG OF CLOUD DRIVE NE IS TO BE PERFORMED UNDER TRAFFIC. MAINTAIN MINIMUM 12' DRIVING LANES.
4. BLACK REMOVABLE PREFORMED PLASTIC MARKING TAPE SHALL BE USED ON ALL CONFLICTING PAVEMENT MARKINGS AS INDICATED ON THE PLAN SHEETS.
5. ADD TRPMs PACED EVERY 10 FEET IN TAPERS/TRANSITION AREAS.
6. SIGN COVERS SHALL BE A RIGID PANEL, NO PLASTIC, BURLAP, ROPE, ETC.
7. ALL SIGNS SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.
8. ACCESS SHALL BE MAINTAINED TO ALL STREETS AND DRIVEWAY ACCESS LOCATIONS IN THE CONSTRUCTION AREA WITH THE EXCEPTION OF STREET CLOSURE.
9. NO STOPPING OF TRAFFIC ON CSAH 52 TO ALLOW TRUCKS/EQUIPMENT INTO/OUT OF CLOUD DRIVE OR PERFORM PAVING OPERATIONS AT THE INTERSECTION BETWEEN THE HOURS OF 6:00 AM AND 9:00 AM AND BETWEEN 3:00 PM AND 6:00 PM.
10. FOR MILLING OPERATIONS IN THE INTERSECTION, A FLAGGING OPERATION SHALL BE USED DURING APPROVED HOURS AND SHALL BE IN ACCORDANCE WITH THE CURRENT MnDOT FIELD MANUAL.
11. FOR RELOCATING TRAFFIC SIGNS DURING CONSTRUCTION, AS DIRECTED BY THE ENGINEER, RELOCATION INCIDENTAL TO TRAFFIC CONTROL.
12. PILES OF DIRT, BITUMINOUS CHUNKS, CONCRETE, AND DEBRIS SHALL BE REMOVED FROM THE WORK ZONE ON A DAILY BASIS OR LOCATED OUTSIDE OF THE CLEAR ZONE.

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\002-652-006\Base\Traffic\TC Stage 2.dwg

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PRINT NAME: JORGE R. BERNAL DELGADO DATE: 12-9-22

SIGNATURE: _____ LICENSE NO. 57216

DRAWN BY TMV DATE 09/15/22

DESIGN BY _____ DATE _____

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ANOKA COUNTY HIGHWAY DEPT.

SAP 002-652-006
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TRAFFIC CONTROL
STAGE 2

SHEET 37 OF 62 SHEETS

0 20' 50' 100'
SCALE IN FEET

CONSTRUCTION UNDER TRAFFIC

CONCRETE MEDIAN WORK

STRIPING KEY

--- PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING

SIGN NOTES:
② TEMPORARY TRAFFIC CONTROL SIGN
⑨ INPLACE SIGN

② ROAD WORK AHEAD W20-1 — PLACE ONE W20-1 ON NB RADISSON RD NE AND ONE W20-1 ON SB RADISSON RD NE

② ROAD WORK AHEAD W20-1 — PLACE ONE W20-1 ON NB AND ONE W20-1 ON SB ON THE CITY LEGS OF RADISSON RD

② W20-1 ROAD WORK AHEAD
② END ROAD WORK G20-2
② W16-7mpL W8-1 BUMP
② W8-12 NO CENTER LINE
② R1-1 STOP
② R6-1R ONE WAY
② BUMP W8-1 W16-7mpL
② NO CENTER LINE W8-12
② BUMP W8-1 W16-7mpL
② BUMP W8-1 W16-7mpL
② BUMP W8-1 W16-7mpL
② R6-1R ONE WAY
② R1-1 STOP
② BUMP W8-1
② BUMP W8-1 W16-7mpL
② ROAD WORK AHEAD W20-1
② END ROAD WORK G20-2
② ROAD WORK AHEAD W20-1
② LANE CLOSED
② TURN LANE
⑨ R3-X2 LEFT TURN LANE
② W14-2L
② W21-X5 LEFT LANE CLOSED
② W20-1 ROAD WORK AHEAD
② END ROAD WORK G20-2

4SY 4SW 4SY 4SW B

CLOUD DRIVE

CSAH 52 (RADISSON RD)

122nd CIRCLE NE

END TRPMs

END LANE TAPE

COVER SIGN

BEGIN LANE TAPE

BEGIN TRPMs

STATION 201+00

205 2005

MATCHLINE "A"

MATCHLINE "A"

0 20' 50' 100'
SCALE IN FEET

NO	DATE	BY	CKD	APPR	REVISION

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ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

SAP 002-652-006
SAP 106-020-038

TRAFFIC CONTROL
STAGE 2

SHEET 38 OF 62 SHEETS

TRAFFIC CONTROL SIGNS

M.U.T.C.D. CODE	SIZE	INSERT	QTY. STG. 1	QTY. STG. 2
R6-1R	36" x 12"	ONE WAY	1	4
R1-1	36" x 36"	STOP	1	2
W4-2	48" x 48"		0	4
W8-1	48" x 48"	BUMP	0	8
W16-7P	30" x 18"		0	8
W20-1	48" x 48"	ROAD WORK AHEAD	9	9
W8-12	48" x 48"	NO CENTER LINE W8-12	0	2
W21-X5	48" x 48"	TURN LANE CLOSED	2	0
W21-X5	48" x 48"	LEFT LANE CLOSED	0	4
W3-4	48" x 48"	BE PREPARED TO STOP	AS NEEDED	
W20-4	48" x 48"	ONE LANE ROAD AHEAD	AS NEEDED	
W20-7	48" x 48"		AS NEEDED	

M.U.T.C.D. CODE	SIZE	INSERT	QTY. STAGE 1	QTY. STG. 2
R3-1	24" x 24"		2	0
R11-2M	48" x 30"	ROAD CLOSED	2	0
M4-10	48" X 18"	DETOUR	2	0
FLASHER			6	0
TYPE III	8 FOOT		9	0
R3-2	24" x 24"		2	0
R11	48" x 30"	LANE CLOSED	0	2
FLASHER			2	0
TYPE III	8 FOOT		5	7
ARROWBOARD			0	0
G20-X1	72" x 60"	ROAD WORK BEGINNING XXXX XX	2 ✳	0
G20-X2A	36" X 18"	END ROAD WORK	4	4
G20-X9	30" X 36"	TURN LANE	0	2
REFLECTORIZED REBOUNDABLE DRUM			85	99
CMS sign to be installed a minimum of ten days prior to actual commencement of road work. Signs to be removed when road work begins.		CMS	2 10 DAYS EACH	2 14 DAYS EACH

CHANGEABLE MESSAGE BOARD - MESSAGE SEQUENCE LAYOUT

CMS SIGN TO BE PLACED A MINIMUM OF TEN DAYS PRIOR TO COMMENCEMENT OF ROAD WORK. SIGNS TO BE REMOVED WHEN ROAD WORK COMMENCES.

		R	O	A	D			
		W	O	R	K			

	B	E	G	I	N	S		
	<	D	A	T	E	>		

✳ G20-X1 sign to be installed a minimum of ten days prior to actual commencement of road work. Sign to be removed when road work begins.

TEMPORARY PAVEMENT MARKING TABULATION			
REMOVABLE POLY PREFORM MARKING (4" WHITE)		LIN FT	640
REMOVABLE POLY PREFORM MARKING (4" YELLOW)		LIN FT	3600
REMOVABLE BLACK MASKT		LIN FT	20

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\002-652-006\Base\Traffic\Staging Quantities.dwg

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ANOKA COUNTY HIGHWAY DEPT.

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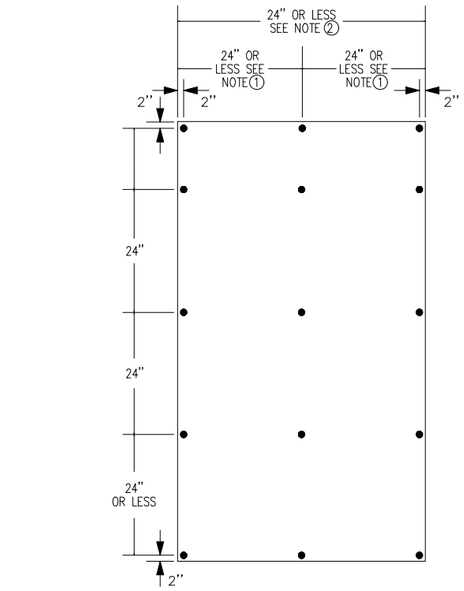
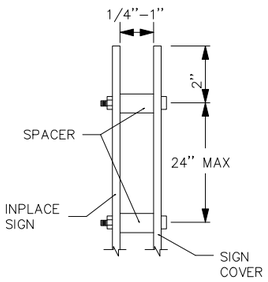
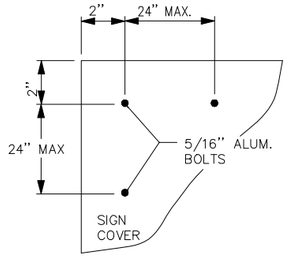
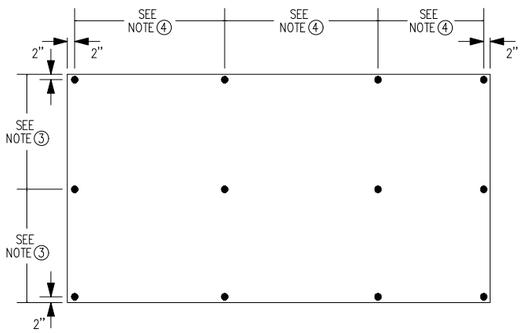
TRAFFIC CONTROL STAGING QUANTITIES

SHEET 39 OF 62 SHEETS









1/26/18

OVERLAY ASSEMBLY STEPS FOR COVERING COMPLETE OR PORTION OF EXTRUDED SIGN PANEL:

1) DRILL 1/4" HOLES ON THE SHEET ALUMINUM OVERLAYS IN ACCORDANCE WITH THE HOLE SPACING ON THE DIAGRAM. OUTSIDE HOLES SHALL NOT BE SPACED MORE THAN 24" APART.
2) ATTACH PLASTIC SPACER(S) (1/4" MIN THICKNESS, 3/8" I.D. AND 7/8" O.D.) WITH DOUBLE FACED TAPE, CENTERED BEHIND EACH DRILLED HOLE.
3) POSITION THE FIRST OVERLAY PANEL'S BOTTOM EDGE FLUSH WITH THE BOTTOM OF THE INPLACE EXTRUDED SIGN PANEL AND THE OVERLAY PANEL'S LOWER LEFT EDGE FLUSH WITH THE LOWER LEFT EDGE OF THE BOTTOM INPLACE EXTRUDED PANEL SECTION.
4) DRILL ALL OF THE OUTSIDE HOLES THROUGH THE INPLACE EXTRUDED SIGN PANEL AND ATTACH THE OVERLAY PANEL WITH SHEET METAL SCREWS.
5) DRILL THE INNER HOLES THROUGH THE INPLACE EXTRUDED SIGN PANEL AND ATTACH WITH SHEET METAL SCREWS AS SPECIFIED IN STEP 4 ABOVE.
6) ABUT THE NEXT OVERLAY PANEL TO THE FIRST ATTACHED OVERLAY PANEL AND PERFORM THE SAME WORK AS SPECIFIED IN STEPS 4 AND 5 ABOVE.
7) PLACE EACH ADDITIONAL OVERLAY PANEL AS SPECIFIED IN STEP 6 ABOVE.

NOTES FOR COVERING COMPLETE OR PORTION OF EXTRUDED SIGN PANEL:

① THE CENTER SHEET METAL SCREWS SHALL BE SPACED AT 1/2 OF THE PANELS WIDTH.

② IF THE SHEET ALUMINUM PANEL IS GREATER THAN 48" WIDE, THE SHEET METAL SCREWS SPACING SHALL BE NO GREATER THAN 24". IF THE SHEET ALUMINUM PANEL IS LESS THAN 24" WIDE, THERE SHALL BE NO INNER HOLES.

③ VERTICAL SPACING FOR THE MOUNTING HOLES IS 50% OF THE PANEL HEIGHT. IF THE PANEL IS LESS THAN 24" HIGH, THERE SHALL BE NO INNER HOLES.

④ HORIZONTAL SPACING FOR MOUNTING HOLES SHALL NOT BE LESS THAN 15" NOR MORE THAN 24".

GENERAL NOTES:

SIGN PANEL OVERLAYS SHALL BE MADE OF A RIGID MATERIAL. (SHEET ALUMINUM, PLYWOOD, CORRUGATED PLASTIC, OR OTHER MATERIAL AS APPROVED BY THE ENGINEER), THE INSTALLATION SHALL ALLOW ADEQUATE AIR FLOW BETWEEN THE OVERLAY PANEL AND THE INPLACE SIGN PANEL BY PROVIDING A MINIMUM SPACING OF 1/4" (1" MAXIMUM).

IF SHEET METAL SCREWS ARE USED WITH CORRUGATED PLASTIC, FENDER WASHERS SHALL BE PLACED BETWEEN SCREWS AND PANEL OVERLAY.

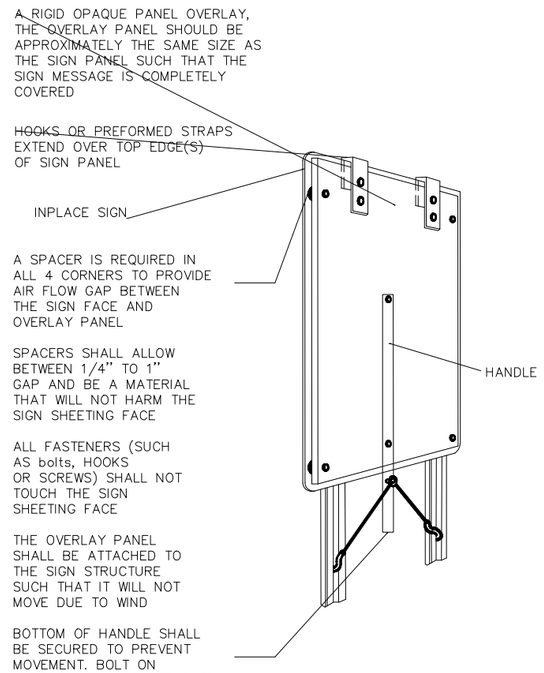
SPACERS SHALL BE A MATERIAL THAT WILL NOT HARM THE SIGN SHEETING FACE (SUCH AS PLASTIC OR RUBBER).

ALL COVERING MATERIAL, MOUNTING HARDWARE AND FASTENERS SHALL BE REMOVED WHEN PANEL OVERLAY IS REMOVED.

SIGN PANEL OVERLAYS USED TO COVER ALL OR PART OF A SIGN SHALL BE THE SAME COLOR AS THE BACKGROUND COLOR OF THE SIGN TO BE COVERED AND SHALL COVER ALL OF THE SIGN OR MESSAGE TO BE COVERED UNLESS SHOWN OTHERWISE IN THE PLAN.

TAPE SHALL NOT BE APPLIED TO THE SIGN SHEETING SURFACE. PRE–MASK OR APPLICATION TAPE SHALL BE REMOVED PRIOR TO EXPOSURE TO SUNLIGHT.

OVERLAY ASSEMBLY COVERING TYPE C OR D SIGN PANEL:



TYPICAL TEMPORARY SIGN COVERING DETAILS

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\002-652-006\Base\Traffic\Typical Temp Sign Covering Detail.dwg

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PRINT NAME: JORGE R. BERNAL DELGADO DATE: 12-9-22

SIGNATURE: _____ LICENSE NO. 57216

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ANOKA COUNTY HIGHWAY DEPT.

SAP 002-652-006
SAP 106-020-038

TRAFFIC CONTROL
TYPICAL TEMP SIGN
COVERING DETAIL

SHEET 40 OF 62 SHEETS

PERMANENT PAVEMENT MARKING PLAN
NOTES AND GUIDELINES

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

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

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

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

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

A MULTI COMP LINE SHALL BE APPLIED WITH A MINIMUM THICKNESS OF 20 MILS (WET) AND 4" WIDE . GLASS BEADS SHALL BE APPLIED AT A MINIMUM RATE OF 25LBS POUNDS PER GALLON RATE SUFFICIENT TO ACHIEVE AN ACCEPTABLE NO-TRACK SYSTEM.

OPERATIONS SHALL BE CONDUCTED ONLY WHEN THE ROAD PAVEMENT SURFACE TEMPERATURES ARE 50 DEGREES FAHRENHEIT OR GREATER.

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

PREFORMED THERMOPLASTIC:
THE PREFORMED THERMOPLASTIC MARKINGS SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS ON CLEAN AND DRY SURFACES. SEE SPECIAL PROVISIONS FOR PREFORMED THERMOPLASTIC MARKING SPECIFICATIONS.

PAINT:
AT THE TIME OF APPLYING THE MARKING MATERIAL, THE APPLICATION AREA SHALL BE FREE OF CONTAMINATION. THE CONTRACTOR SHALL CLEAN THE ROADWAY SURFACE PRIOR TO THE LINE APPLICAITON IN A MANNER AND TO THE EXTENT REQUIRED BY THE ENGINEER.

GLASS BEADS SHALL BE APPLIED IMMEDIATELY AFTER APPLICATION OF THE PAINT LINE.

EXCEPT WHEN USED AS A TEMPORARY MARKING, PAVEMENT MARKINGS SHALL ONLY BE APPLIED IN SEASONABLE WEATHER WHEN AIR TEMPERATURE IS 50 DEGREES FARHENHEIT OR HIGHER AND SHALL NOT BE APPLIED WHEN THE WIND OR OTHER CONDITIONS CAUSE A FILD OR DUST TO BE DEPOSITED ON THE PAVEMENT SURFACE AFTER CLEANING AND BEFORE THE MARKING MATERIAL CAN BE APPLIED.

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

PAVEMENT MARKING TABULATION - ANOKA COUNTY CSAH 52

ITEM	UNIT	TOTAL QUANTITY
4" SOLID LINE MULTI COMP (WHITE)	LIN FT	260
4" SOLID LINE MULTI COMP (YELLOW)	LIN FT	440
4" DOUBLE LINE MULTI COMP (YELLOW)	LIN FT	0
24" SOLID LINE - PREFORMED THERMOPLASTIC (WHITE) (PMS*)	LIN FT	98
3'X6' ZEBRA CROSSWALK - PREFORMED THERMOPLASTIC	SQ FT	612
PAVEMENT MESSAGE - PREFORMED THERMOPLASTIC (LEFT ARROW)	SQ FT	62
PAVEMENT MESSAGE - PREFORMED THERMOPLASTIC (RIGHT ARROW)	SQ FT	62

* PAVEMENT MARKING SPECIAL

PAVEMENT MARKING TABULATION - CITY BLAINE CLOUD DRIVE

ITEM	UNIT	TOTAL QUANTITY
4" SOLID LINE MULTI COMP (WHITE)	LIN FT	250
4" DOUBLE LINE MULTI COMP (YELLOW)	LIN FT	150
24" SOLID LINE - PREFORMED THERMOPLASTIC (WHITE) (PMS*)	LIN FT	48
3'X6' ZEBRA CROSSWALK - PREFORMED THERMOPLASTIC	SQ FT	306
PAVEMENT MESSAGE - PREFORMED THERMOPLASTIC (RIGHT ARROW)	SQ FT	62
PAVEMENT MESSAGE - PREFORMED THERMOPLASTIC (LT/THRU ARROW)	SQ FT	60

* PAVEMENT MARKING SPECIAL

SYMBOLS & MATERIALS LEGEND

CROSSWALK BLOCK WHITE - POLY PREFORM

PAVEMENT MESSAGE (LEFT ARROW) POLY PREFORM

STRIPING KEY

CIRCLE - MULTI COMP

TRIANGLE - PAINT

SQUARE - POLY PREFORM THERMOPLASTIC

PENTAGON - REMOVABLE PREFORMED PLASTIC MARKING

1ST DIGIT WIDTH	2ND DIGIT PATTERN	3RD DIGIT COLOR
4", 8", ETC.	S - SOLID B - BROKEN T - DOTTED D - DOUBLE SOLID	W - WHITE Y - YELLOW B - BLACK

EXAMPLE: (4SW) = SOLID LINE WHITE - MULTI COMP

— — BROKEN LINE - 50' CYCLE (10' LINE, 40' GAP)

- - - - DOTTED LINE - 15' CYCLE (3' LINE, 12' GAP) UNLESS SHOWN OTHERWISE IN THE PLAN

NO	DATE	BY	CKD	APPR	REVISION

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

PRINT NAME: JORGE R. BERNAL DELGADO DATE: 12-9-22

SIGNATURE: _____ LICENSE NO. 57216

DRAWN BY TMV DATE 09/16/22

DESIGN BY _____ DATE _____

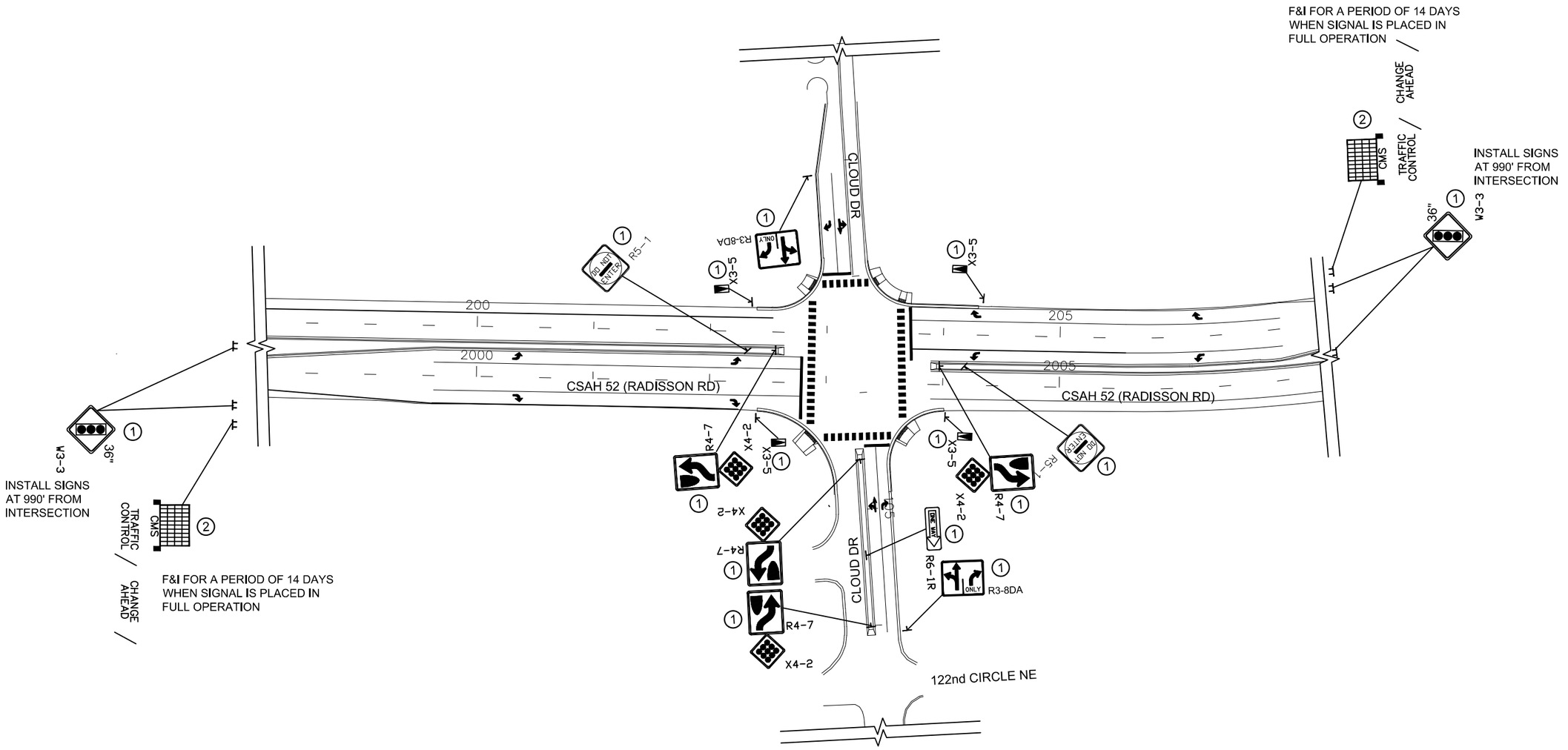
CHECKED BY SRT DATE 10/19/22

ANOKA COUNTY HIGHWAY DEPT.

SAP 002-652-006
SAP 106-020-038

PERMANENT PAVEMENT MARKING PLAN DETAILS

SHEET 41 OF 62 SHEETS



SIGN NOTES:

① INSTALL SIGN

② TEMPORARY TRAFFIC CONTROL SIGN

NOTES:

- CONTRACTOR SHALL SUPPLY AND INSTALL THE PORTABLE CHANGEABLE MESSAGE SIGN (CMS) AT TIME CLOUD DRIVE SIGNAL SYSTEM IS PLACED IN FULL OPERATION FOR A PERIOD OF 14 DAYS, TO A LOCATION AS SPECIFIED BY THE ENGINEER. PAYMENT SHALL BE MADE AS PER ITEM 2563.613 PORTABLE CHANGEABLE MESSAGE SIGN BY THE UNIT/DAY.
- REFER TO SIGNAL DESIGN PLAN SHEETS FOR MAST ARM AND SIGNAL POLE SIGN PLACEMENT.
- ANY REQUIRED PERMANENT SIGNING SHALL BE INSTALLED THE SAME DAY AS PERMANENT STRIPING.
- ALL EXISTING SIGNING SHALL REMAIN IN PLACE DURING CONSTRUCTION. ANY SALVAGED AND REINSTALLED SIGNS SHALL BE INSTALLED ON TEMPORARY SUPPORTS UNTIL THE PERMANENT INSTALLATION CAN BE MADE. THIS WILL BE CONSIDERED AS INCIDENTAL TO INSTALL SIGN TYPE C.
- ALL PERMANENT SIGNING SHALL BE PLACED IMMEDIATELY FOLLOWING PERMANENT STRIPING.

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\002-652-006\Base\Traffic\Permanent Signing.dwg

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ANOKA COUNTY HIGHWAY DEPT.

SAP 002-652-006
SAP 106-020-038

PERMANENT SIGNING

SHEET 42 OF 62 SHEETS

TYPE C SIGN PANELS - ANOKA COUNTY CSAH 52

M.U.T.C.D. CODE	SIZE	INSERT	QUANTITY	SQ FT PANEL AREA	SQ FT TOTAL AREA	MOUNTING POST PER INSTALLATION	MOUNTING HEIGHT
R4-7	24" X 30"		2	5.00	10.00	1	7.0'
OM1-1	18" X 18"		2	2.25	4.50		
R5-1	30" X 30"		2	6.25	12.50	1	7.0'
W3-3	36" X 36"		4	9.00	36.00	2	7.0'
TYPE C SIGN PANEL TOTALS			10		63.00		

TYPE C SIGN PANELS - CITY BLAINE CLOUD DRIVE

M.U.T.C.D. CODE	SIZE	INSERT	QUANTITY	SQ FT PANEL AREA	SQ FT TOTAL AREA	MOUNTING POST PER INSTALLATION	MOUNTING HEIGHT
R3-8DA	36" X 30"		2	7.50	15.00	1	7.0'
R4-7	24" X 30"		2	5.00	10.00	1	7.0'
OM1-1	18" X 18"		2	2.25	4.50		
R6-1R	36" X 12"		1	3.00	3.00	1	7.0'
TYPE C SIGN PANEL TOTALS			9		32.50		

PROJECT TOTALS	9	32.50

MARKER SIGN PANELS

M.U.T.C.D. CODE	SIZE	INSERT	QUANTITY	SQ FT PANEL AREA	SQ FT TOTAL AREA	MOUNTING POST PER INSTALLATION	MOUNTING HEIGHT
X3-5	6" X 12"		2	0.50	1.00	1	4.0'
X3-5	6" X 12"		2	0.50	1.00	1	4.0'
MARKER SIGN PANELS TOTAL			4		2.00		

PROJECT TOTALS	14	65.00

NOTES:

- ALL SIGNS SHALL BE FURNISHED AND INSTALLED UNLESS OTHERWISE NOTED.

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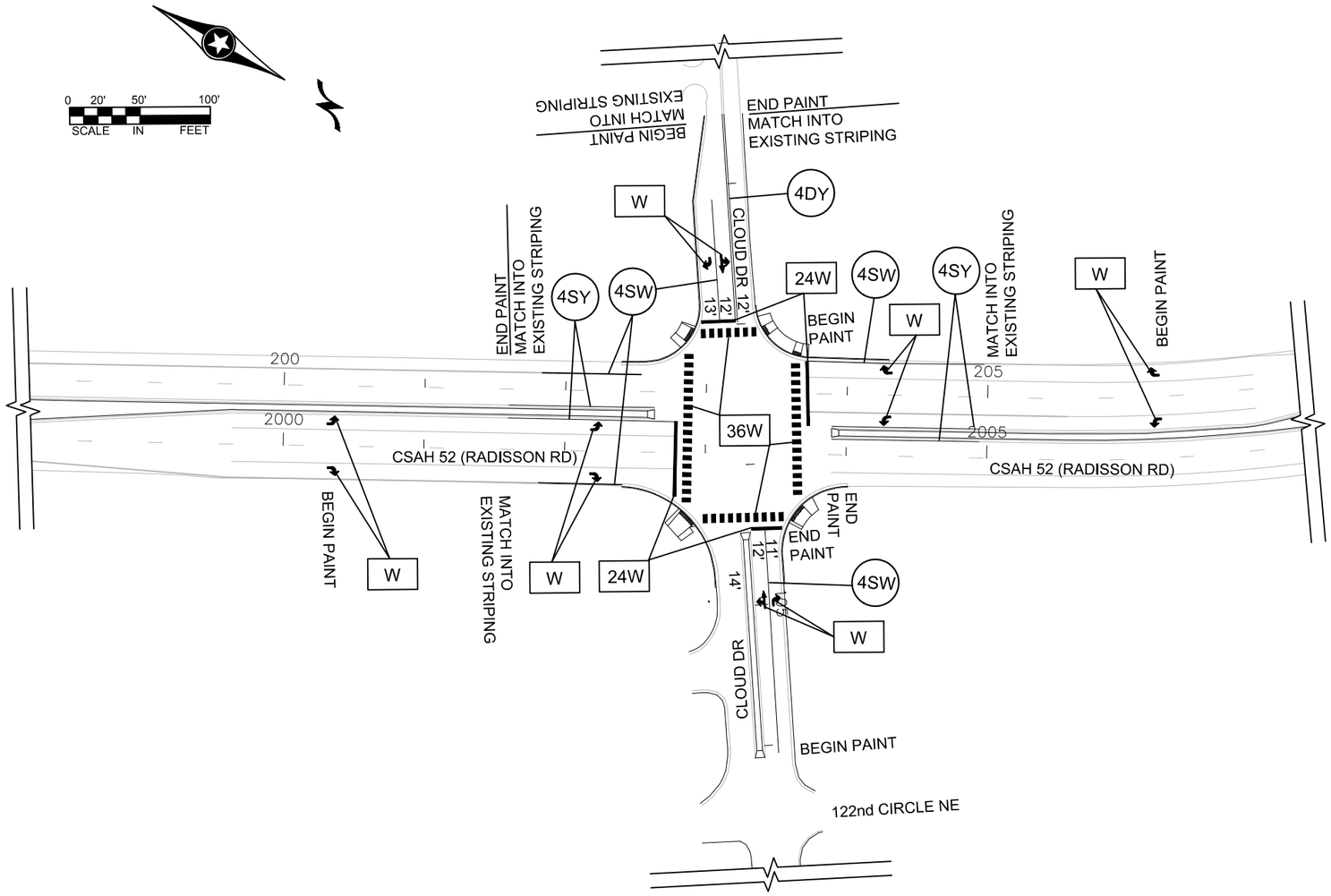
SAP 002-652-006
SAP 106-020-038

PERMANENT SIGNING QUANTITIES



STRIPING KEY

(---) CIRCLE - MULTI COMP

[---] SQUARE - POLY PREFORM

NOTES:

- LOCATIONS OF PAVEMENT MARKINGS ARE APPROXIMATE. EXACT LOCATIONS WILL BE DETERMINED IN THE FIELD BY THE ENGINEER.
- ALL PERMANENT STRIPING AND PAVEMENT MESSAGES SHALL BE PLACED WITHIN 72 HOURS OF MAINLINE PAVING.
- MATCH INTO EXISTING STRIPING.
- TOUCH UP ALL EXISTING STRIPING THAT WAS MARRED/DAMAGED FROM LANE TAPE.
- ALL PED CROSSING PAVEMENT MARKINGS AND STOP BARS SHALL BE PLACED PRIOR TO SIGNAL SYSTEM PUT IN FULL OPERATIONS.

NO	DATE	BY	CKD	APPR	REVISION

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ANOKA COUNTY HIGHWAY DEPT.

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SAP 106-020-038

PERMANENT STRIPING

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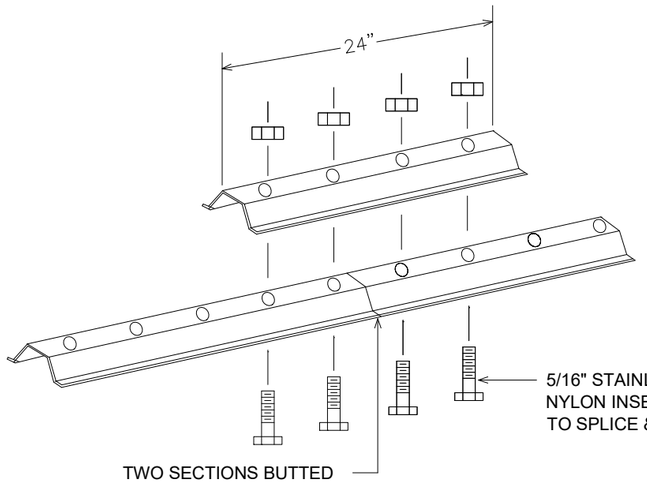
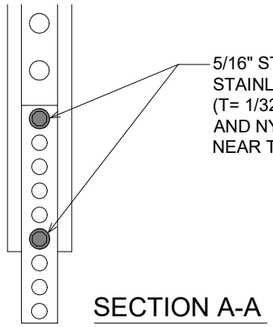
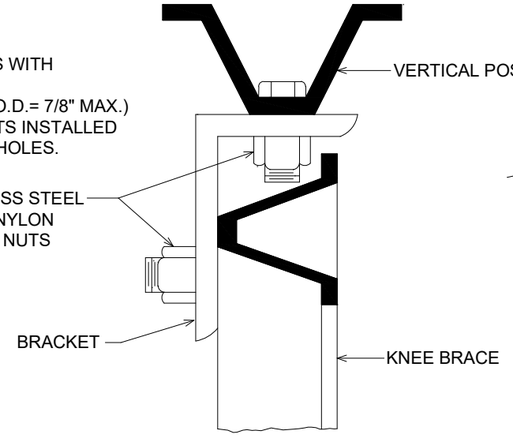
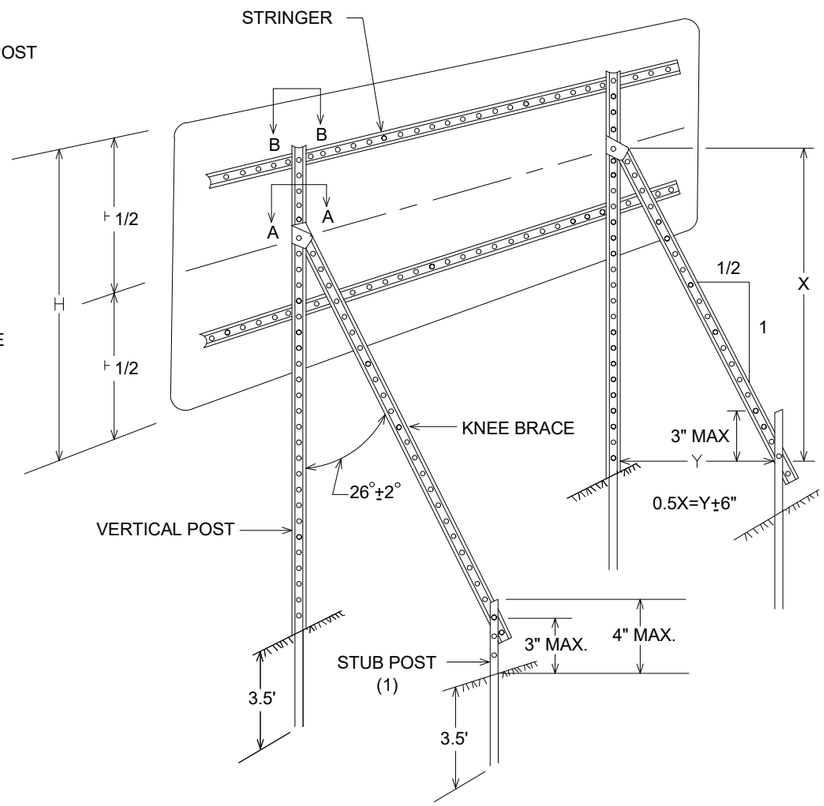


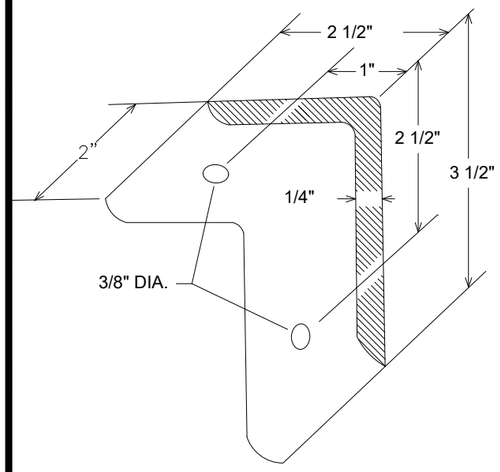


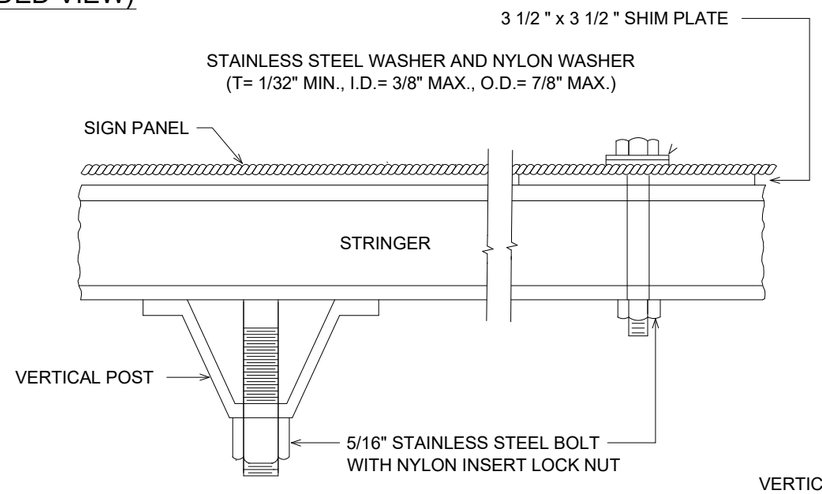
SECTION A-A

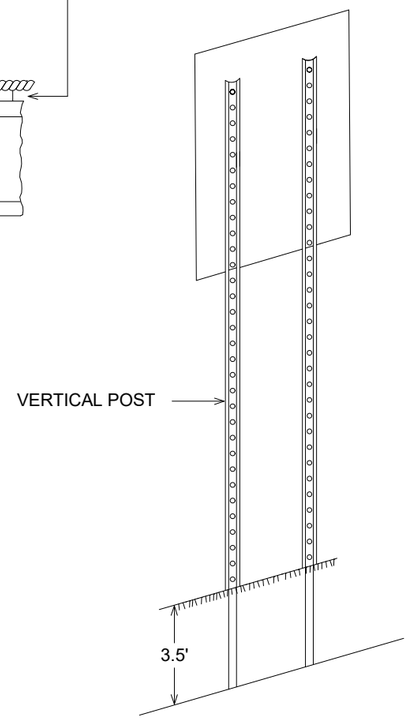




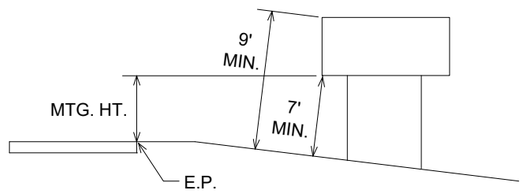
LATERAL BRACE OR STRINGER SPLICE DETAIL (EXPLODED VIEW)







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

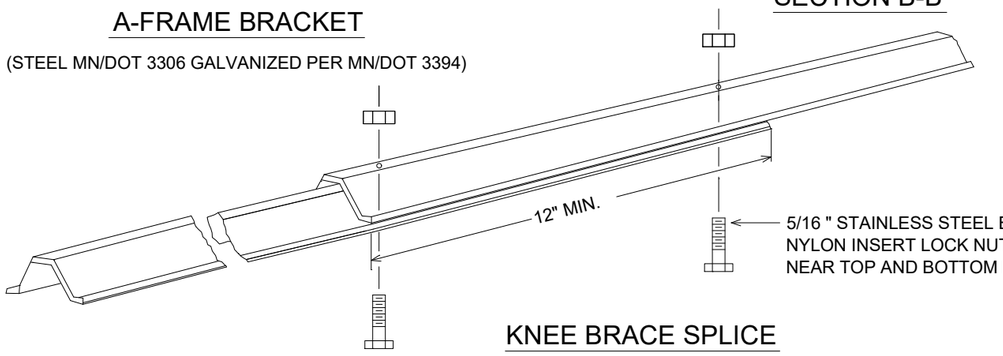


TYPICAL MOUNTING

(1) OFFSET STUB POST 1' TOWARD ROADWAY RELATIVE TO VERTICAL POST.

A-FRAME BRACKET

(STEEL MN/DOT 3306 GALVANIZED PER MN/DOT 3394)



KNEE BRACE SPLICE

TYPICAL INSTALLATION 36" AND LARGER TYPE "C" SIGNS

TYPE C & D SIGN STRUCTURAL DETAILS

NO	DATE	BY	CKD	APPR	REVISION

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SAP 002-652-006
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SIGNING & STRIPING DETAILS

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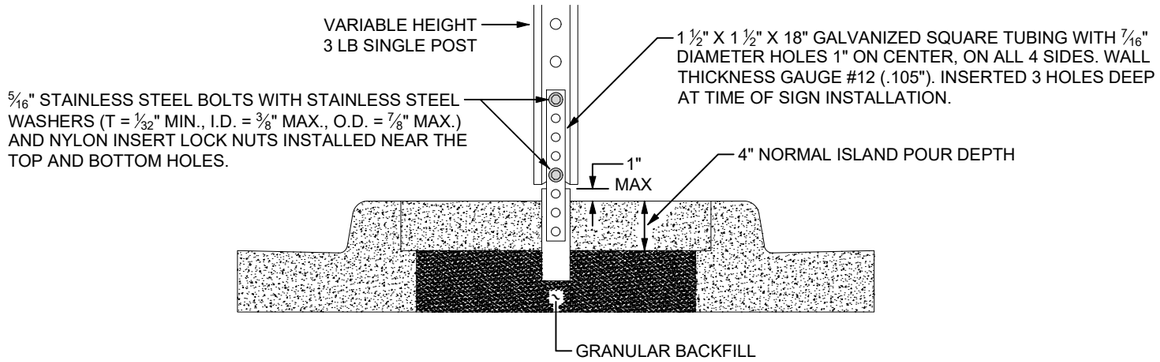
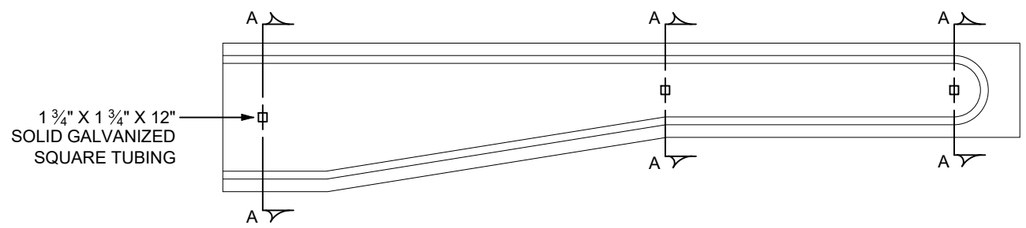
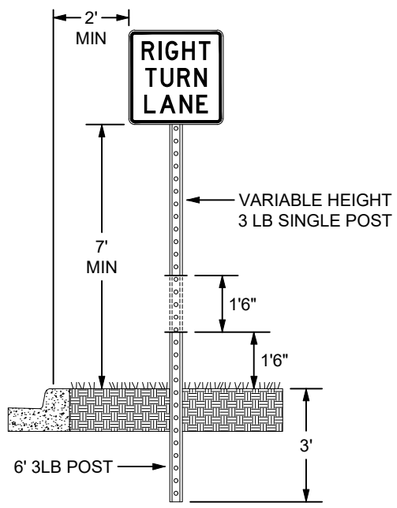
SIGN INSTALLATION TYPICALS

SECTION A - A

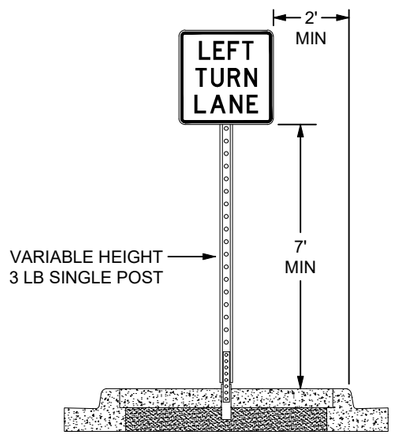




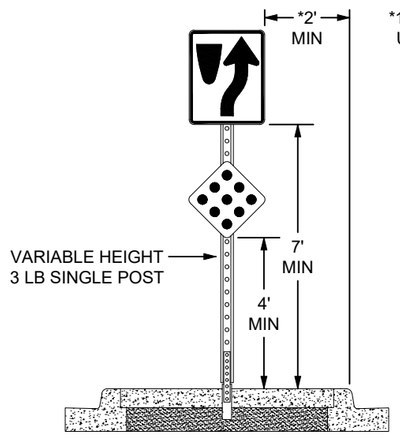
GROUND POST MOUNT SIGN
INSTALLATION TYPICAL



ISLAND MOUNT BREAK-AWAY SIGN
INSTALLATION TYPICAL



ISLAND MOUNT BREAK-AWAY SIGN
SIGN INSTALLATION TYPICAL
KEEP RIGHT/CLUSTER



NOTES:

- TELSPAR INSERT NOT TO BE INSERTED MORE THAN 3 MOUNTING HOLES DEEP INTO BASE. TYPICAL ON ALL SIGN INSTALLATIONS.

INSTALLATION NEAR SHARED-USE PATHWAY (MN MUTCD):

- THE MINIMUM HEIGHT MEASURED VERTICALLY FROM THE SHARED-USE PATHWAY TO THE BOTTOM OF THE SIGN SHALL BE 7 FEET. IF A SECONDARY SIGN IS MOUNTED BELOW THE PRIMARY SIGN AND IS MOUNTED LESS THAN 7 FEET, IT SHALL NOT PROJECT MORE THAN 4 INCHES INTO THE SHARED-USE PATHWAY.

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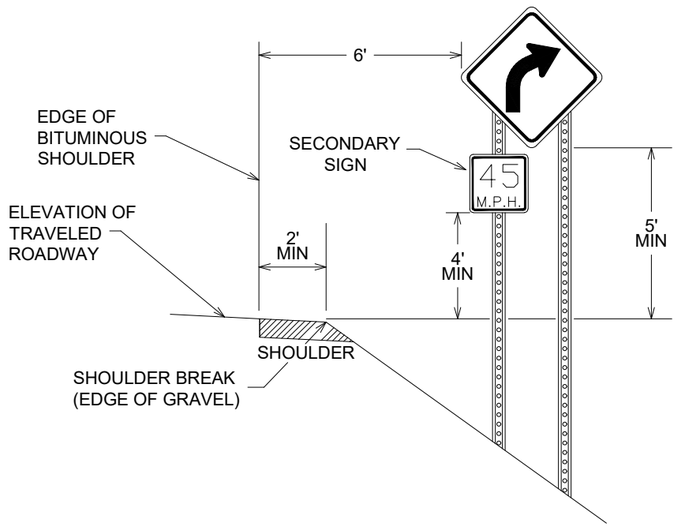
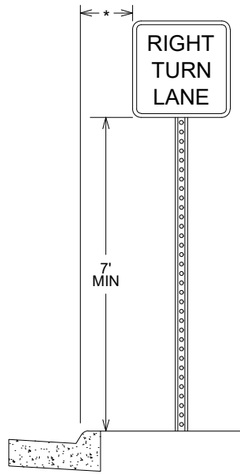
SIGNING & STRIPING DETAILS

SHEET 46 OF 62 SHEETS

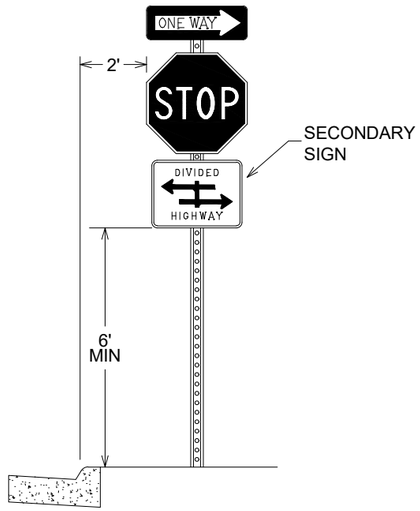
TYPICAL SIGN PLACEMENT
(RURAL)

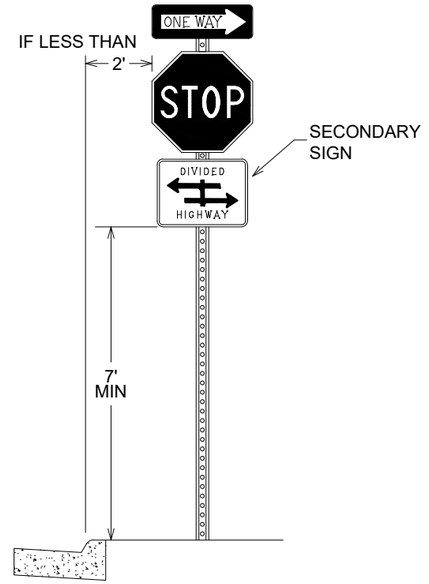


TYPICAL SIGN PLACEMENT
(URBAN)



*2' - NARROW BOULEVARD (≤ 8' WIDE)
6' - WIDE BOULEVARD

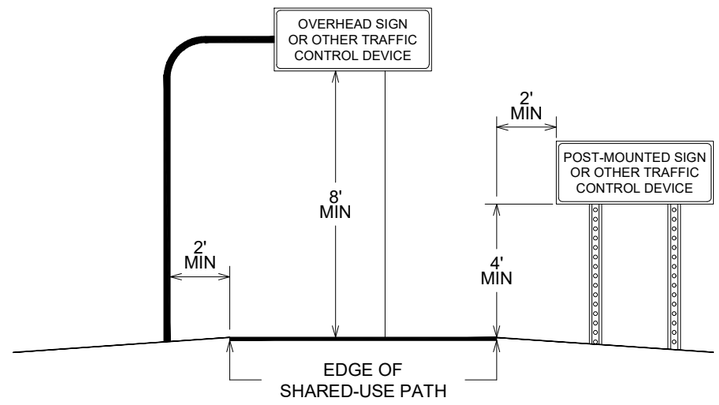




NOTES:

- ALL DIMENSIONS ARE MINIMUMS
- MAINTAIN A DISTANCE OF 2' BETWEEN SIGNS AND BITUMINOUS TRAIL
- 7' SIGN CLEARANCE IF A 2' DISTANCE BETWEEN SIGN AND BITUMINOUS TRAIL CANNOT BE MAINTAINED

TYPICAL SIGN PLACEMENT
SHARED-USE PATH



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ANOKA COUNTY

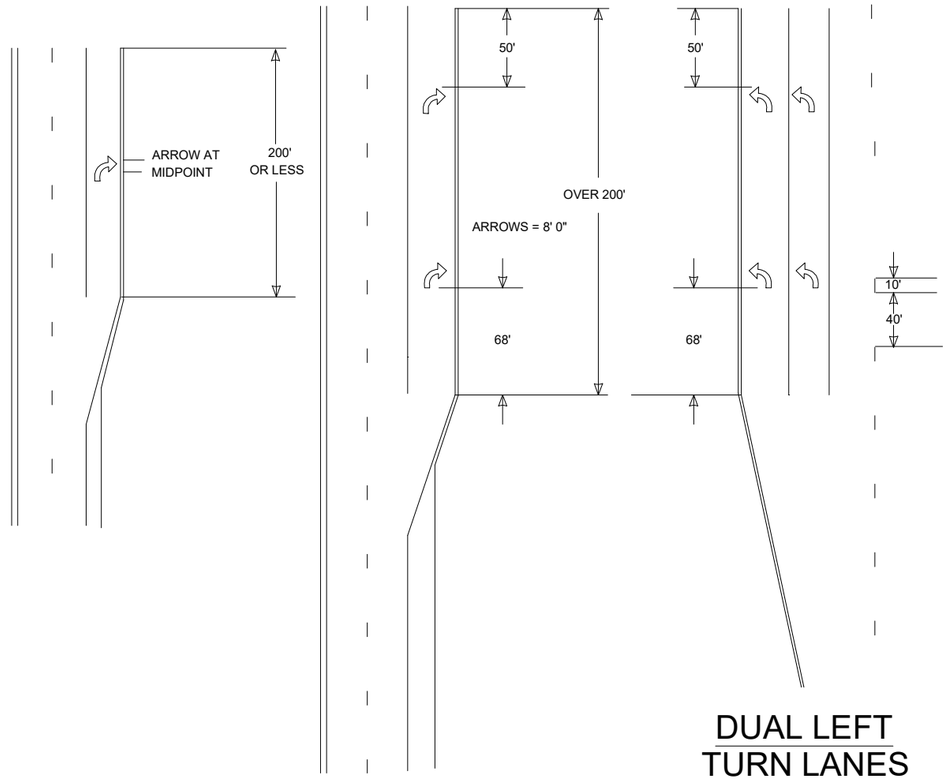
ANOKA COUNTY HIGHWAY DEPT.

SAP 002-652-006
SAP 106-020-038

SIGNING & STRIPING DETAILS

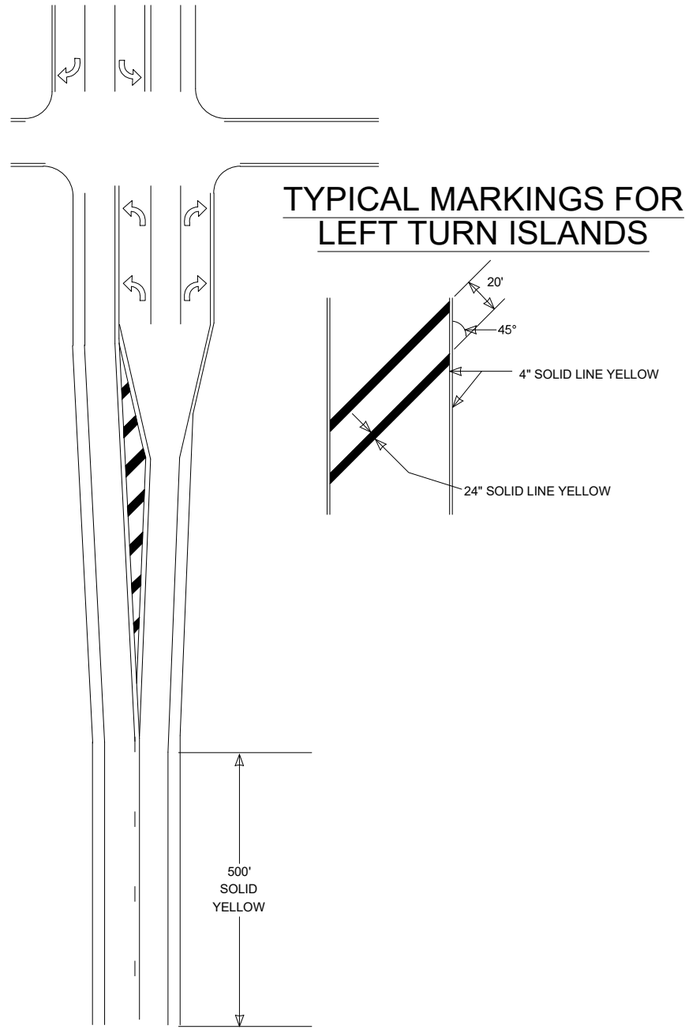
SHEET 47 OF 62 SHEETS

TYPICAL MESSAGE PLACEMENT FOR TURN LANES



DUAL LEFT
TURN LANES

TYPICAL MARKINGS FOR LEFT TURN ISLANDS



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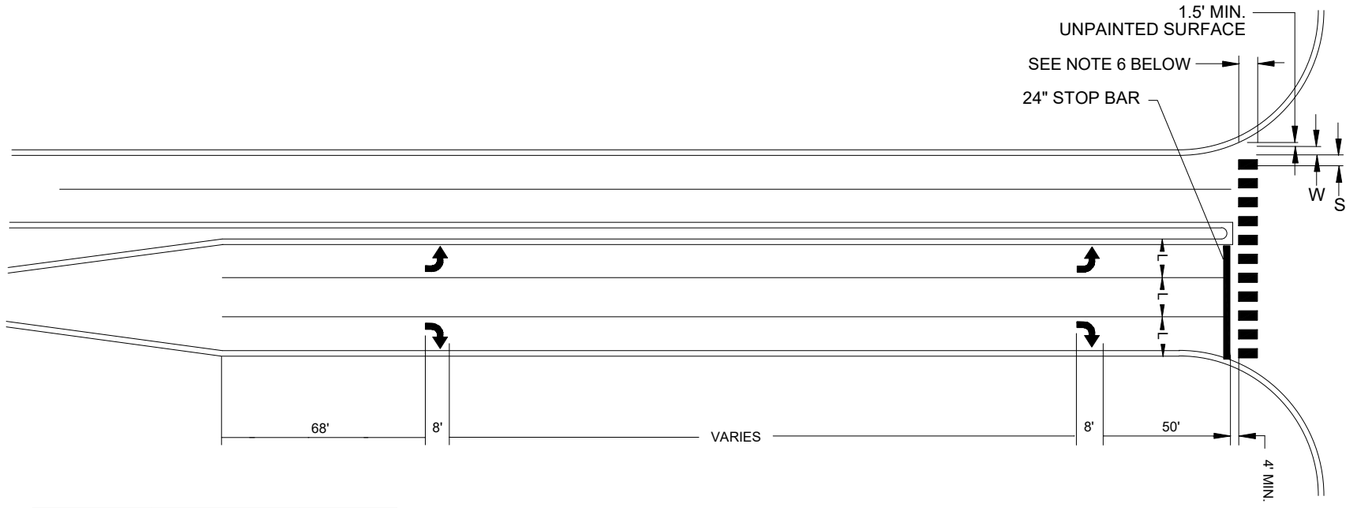
SIGNING & STRIPING DETAILS

SHEET 48 OF 62 SHEETS

MARKINGS FOR PEDESTRIAN CROSSWALKS



(L)	(W)	(S)
WIDTH OF INSIDE LANE	WIDTH OF PAINTED AREAS	WIDTH OF SPACE
9'	2.0'	2.5'
10'	2.5'	2.5'
11'	2.5'	3.0'
12'	3.0'	3.0'
13'	3.0'	3.5'

NOTES: CROSSWALKS:

1.) PAINTED AREAS ARE TO BE CENTERED ON CENTER AND LANE LINES, EVEN IF INTERSECTION IS NOT ALIGNED.

2.) LOCATION OF ZEBRA CROSSWALKS AND STOP BARS, SIGNAL LOOPS AND PED RAMPS ARE APPROXIMATE. FINAL LOCATIONS ARE TO BE DETERMINED AND FIELD VERFIED DURING CONSTRUCTION BY THE FIELD ENGR.

3.) ZEBRA CROSSWALKS ARE TO BE PARALLEL TO THE DRIVING LANE OR LANES. EVEN IF THE STREET IS ON AN ANGLE TO THE INTERSECTION.

4.) A MIN. OF 1.5' (450mm) CLEAR DISTANCE MUST BE LEFT ADJACENT TO THE CURB. IF LAST PAINTED AREA FALLS INTO THIS AREA, IT MUST BE OMITTED.

5.) ON TWO LANE STREETS, USE SPACING SHOWN FOR AN 11' (3.3mm) INSIDE LANE.

6.) THE BLOCKS SHALL BE A MINIMUM 6' AND AT LEAST AS LONG AS THE TRUNCATED DOMES, FOR FANNED TRUNCATED DOMES THE BLOCKS SHALL BE AT LEAST AS LONG AS THE APPROACHING SIDEWALK OR SHARED USE PATH.

NO	DATE	BY	CKD	APPR	REVISION

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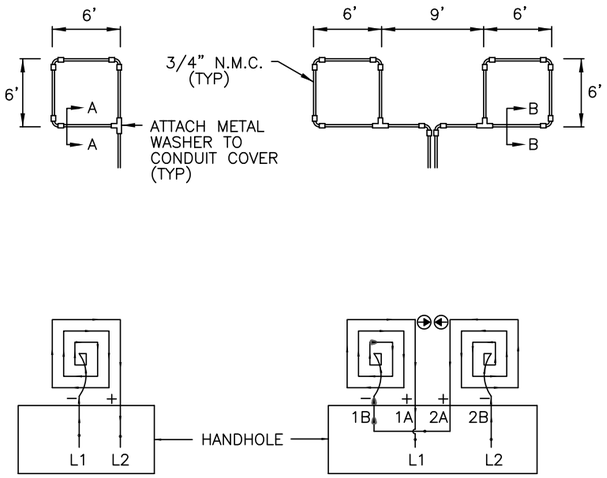
SHEET 49 OF 62 SHEETS



LOOP CONNECTIONS SHALL BE LABELED AND SPLICED IN THE HANDHOLE AS FOLLOWS:

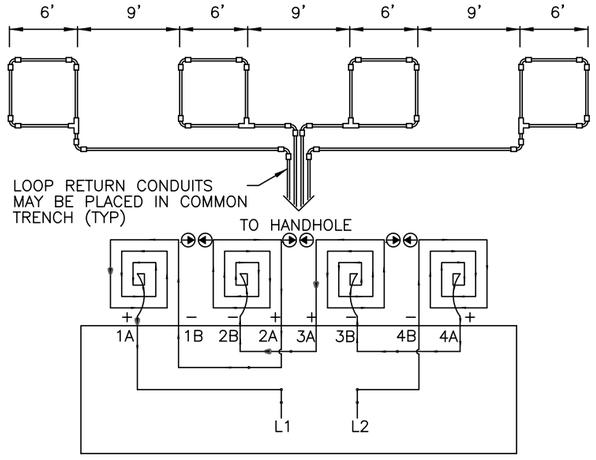
L1 TO 1A
1B TO 2A
2B TO L2

LOOP DETECTOR DETAIL 'A'

(LOOP PHASING FOR SINGLE CONNECTION)

LOOP DETECTOR DETAIL 'B'

(LOOP PHASING FOR SERIES CONNECTION)



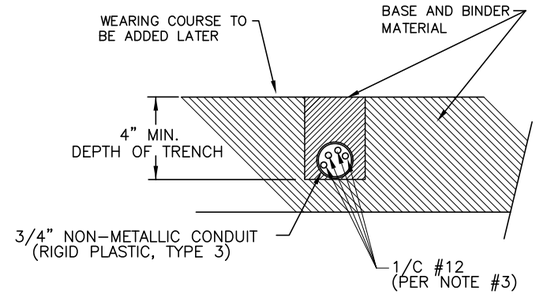
LOOP CONNECTIONS SHALL BE LABELED AND SPLICED IN THE HANDHOLE AS FOLLOWS:

L1 TO 1A	3B TO 4A
1B TO 2A	4B TO L2
2B TO 3A	

SPLICE CONTROL CABLE TO L1 & L2 IN HANDHOLE. ALL CONDUCTORS SHALL BE TAGGED IN HANDHOLE (1A, 1B, ECT)

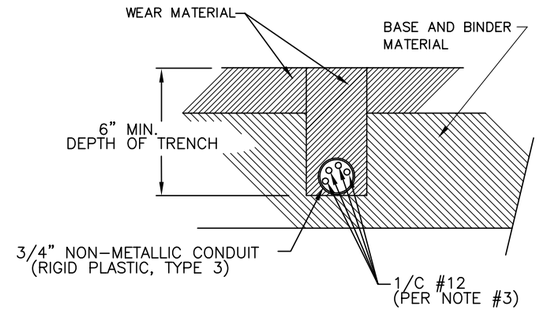
LOOP DETECTOR DETAIL 'C'

(LOOP PHASING FOR SERIES CONNECTION)



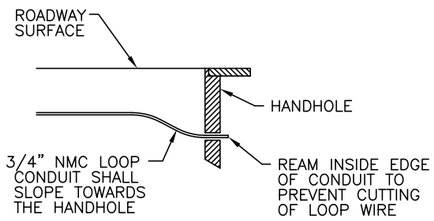
SECTION A–A

DETAIL FOR LOOP INSTALLATION IN NEW ROADWAY



SECTION B–B

DETAIL FOR LOOP INSTALLATION IN EXISTING ROADWAY



DRAINAGE DETAIL

LOOP DETECTOR WIRING

1) ALL CORNERS SHALL BE 90° CONDUIT BENDS.
2) CONNECT WIRES IN HANDHOLES USING SPLICE KIT METHOD DESCRIBED IN THE SPECIAL PROVISIONS.
3) LOOP DETECTOR WIRES SHALL BE #12 AWG CROSSED LINKED POLYETHYLENE (XLP). SEE SPECIAL PROVISIONS.
4) LOOP LEAD IN WIRES SHALL BE TWISTED A MIN. OF (5) TURNS PER FOOT THROUGH THE CONDUIT TO THE HANDHOLE.
5) NMC DESIGNATES NON-METALLIC CONDUIT (SPEC. 3803)
6) LOOPS 6' x 6' THRU 6' x 14' SHALL HAVE (4) TURNS.
7) LOOPS 6' x 15' AND LARGER SHALL HAVE (2) TURNS.

LEGEND OF SYMBOLS

- CONTROLLER AND SERVICE EQUIP. NO's
- SIGNAL BASE NO.
- SIGNAL FACE NO.
- LUMINAIRE NO.
- CONTROLLER AND CABINET
- CONTROLLER AND CABINET – IN PLACE
- HANDHOLE
- HANDHOLE – IN PLACE
- RIGID STEEL CONDUIT (RSC)
- RIGID STEEL CONDUIT (RSC) – IN PLACE
- SIGNAL FACE WITH BACKGROUND SHIELD
- SIGNAL FACE W/O BACKGROUND SHIELD
- SIGNAL FACE – IN PLACE
- PEDESTRIAN INDICATORS
- PEDESTRIAN INDICATORS – IN PLACE
- PEDESTRIAN PUSH BUTTONS ON PEDESTAL OR POLE
- PEDESTRIAN PUSH BUTTON STATION
- TRAFFIC SIGNAL PEDESTAL
- TRAFFIC SIGNAL PEDESTAL – INPLACE
- TRAFFIC SIGNAL POLE AND MAST ARM
- TRAFFIC SIGNAL POLE AND MAST ARM – IN PLACE
- STREET LIGHT POLE AND LUMINAIRE
- STREET LIGHT POLE AND LUMINAIRE – IN PLACE
- MAST ARM AND LUMINAIRE
- MAST ARM AND LUMINAIRE – INPLACE
- WOOD POLE
- WOOD POLE – IN PLACE
- SOURCE OF POWER
- RAILROAD SIGNAL – IN PLACE
- RIGHT OF WAY LINE
- CENTERLINE
- EDGE OF ROADWAY
- SHOULDERLINE
- CURB LINE
- STOP BAR
- EMERGENCY VEHICLE PREEMPTION DETECTOR

ABBREVIATIONS

3–1(EG)	SIGNAL HEAD PHASE "3" – NO "1"
BR. GR.	BARE GROUND
CH. SW.	CHECK SWITCH
CLR	CLEAR
D2–1(EG)	DETECTOR PHASE "2" – NO. "1"
DWK	DON'T WALK
EQG	EQUIPMENT GROUND
EVP	EMERGENCY VEHICLE PRE–EMPTION
F&I	FURNISH AND INSTALL
FL	FLASH/FLASHING
G	GREEN
GLTA	GREEN LEFT TURN ARROW
GRN	GREEN
GR. R	GROUND ROD
GRTA	GREEN RIGHT TURN ARROW
GTHA	GREEN THRU ARROW
HH	HANDHOLE
HPS	HIGH PRESSURE SODIUM
JB	JUNCTION BOX
LUM	LUMINAIRE
NEU	NEUTRAL
NMC	NONMETALLIC CONDUIT
P2–1(EG)	PED INDICATION PHASE "2" – NO. "1"
PB	PUSH BUTTON
PB2–1(EG)	PUSH BUTTON PHASE "2" – NO. "1"
PEC	PHOTOELECTRIC CELL
PED	PEDESTRIAN
R	RED
R&S	REMOVE AND SALVAGE
RLTA	RED LEFT TURN ARROW
RRTA	RED RIGHT TURN ARROW
RSC	RIGID STEEL CONDUIT
SOP	SOURCE OF POWER
SPR	SPARE
ST. LHT	STREET LIGHT
STA	STATION
SW	SWITCH
SWD	SWITCHED
S&R	SALVAGE AND REINSTALL
TDW	TELEPHONE DROP WIRE
WLK	WALK
YEL	YELLOW
YLTA	YELLOW LEFT TURN ARROW
YRTA	YELLOW RIGHT TURN ARROW
YTHA	YELLOW THRU ARROW

TRAFFIC SIGNAL TABULATION

ITEM NO	ITEM	UNIT	TOTAL ESTIMATED QUANTITY	PARTICIPATION	
				SAP 002–651–006	SAP 106–020–038
2545	SIGNAL SERVICE CABINET	EACH	1	0.25	0.75
2565	EMERGENCY VEHICLE PREEMPTION SYSTEM	LUMP SUM	1		1
2565	TRAFFIC CONTROL INTERCONNECT	LUMP SUM	1	1	
2565	TRAFFIC CONTROL SIGNAL SYSTEM	SYSTEM	1	0.25	0.75

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

STANDARD PLATES – SIGNAL SYSTEMS

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

PLATE NO.	DESCRIPTION
8111 E	TRAFFIC SIGNAL BRACKETING (PEDESTAL MOUNTED) (3 SHEETS)
8112 I	PEDESTAL FOUNDATION (FOR TRAFFIC CONTROL SIGNALS)
8118 D	SERVICE EQUIPMENT & POLE–TRAFFIC CONTROL SIGNALS
8119 C	GROUND MOUNTED CABINET FOUNDATION
8121 H	TRANSFORMER BASE & POLE BASE PLATE (2 SHEETS)
8122 F	PEDESTAL AND PEDESTAL BASE (FOR TRAFFIC CONTROL SIGNALS SUPPORT (2 SHEETS)
8123 G	POLE & MAST ARM–LUMINAIRES & TRAFFIC LIGHTS ASSEMBLY (2 SHEETS)
8126 L	POLE FOUNDATION (PA90 & PA100)
8129 A	SHIM AND WASHER (TRAFFIC CONTROL SIGNALS AND ROADWAY LIGHTING)

SAP 002-652-006
SAP 106-020-038
CITY PROJECT 22-08

SEH Project	ANOKC 163661
Drawn By	JMG
Designed By	JMG
Checked By	JMG

Rev.#	Revision Issue Description	Date

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

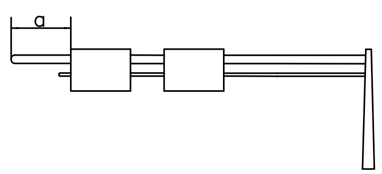
Date: November 17, 2022 Name: John M. Gray, PE Lic. No. 22457

CSAH 52 AT CLOUD DRIVE NE
ANOKA COUNTY, MINNESOTA
CITY OF BLAINE

TRAFFIC CONTROL SIGNAL SYSTEM DETAILS AND STANDARD PLATES
CSAH 52 (RADISSON RD NE) AT CLOUD DR NE

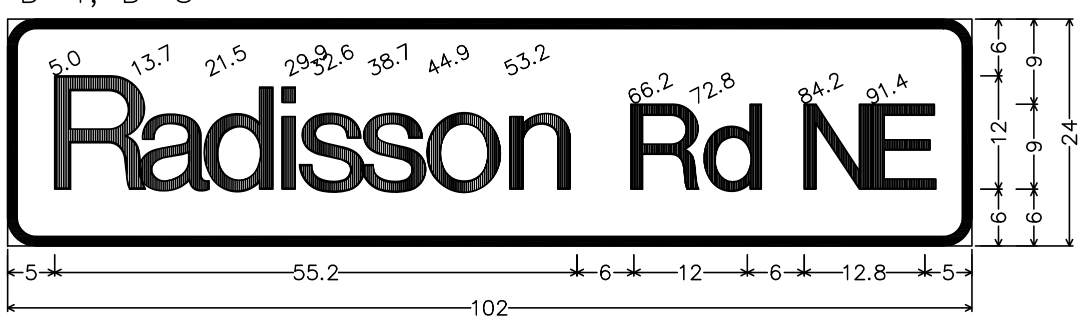
MAST ARM AND POLE MOUNTED SIGNS SIGN PANELS – TYPE C (F & I)								
POLE NO.	TOTAL QUANTITY	a (FT)	PANELS SIZE (IN.)	UNIT AREA (SQ FT)	TOTAL AREA (PROJECT) (SQ FT)	CODE NO.	PANEL LEGEND
3,5	2	1'	36 x 42	10.50	21.00	R10-X12	LEFT TURN YIELD ON FLASHING YELLOW
3,5	2	(1)	36 x 12	3.00	6.00	R6-1L	ONE WAY (LEFT)
3,5	2	(1)	36 x 12	3.00	6.00	R6-1R	ONE WAY (RIGHT)
TOTAL	6				33.00		

MAST ARM MOUNTED SIGNS SIGN PANELS – TYPE D SIGNALS (F & I)						
SIGN PANEL	POLE NO.	a (FT)	SIZE (IN)	AREA/SIGN (SQ. FT.)	NO. REQ.	PANEL LEGEND
D-1	1	28'	102 x 24	17.00	1	Radisson Rd NE
D-2	3	12'	78 x 24	13.00	1	Cloud Dr NE
D-3	4	28'	102 x 24	17.00	1	Radisson Rd NE
D-4	5	12'	78 x 24	13.00	1	Cloud Dr NE
TOTAL QUANTITIES				60.00	4	



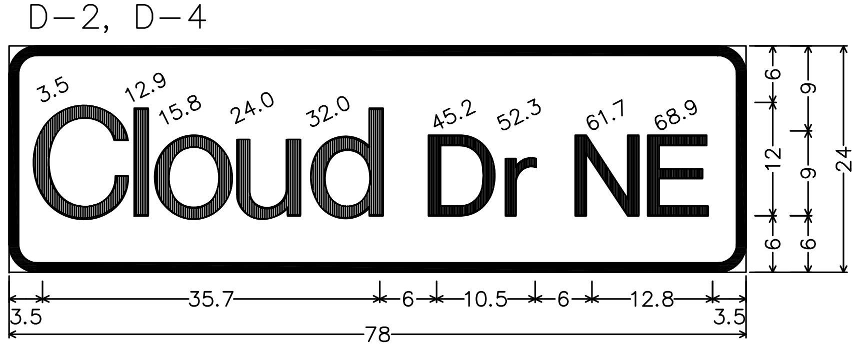
"a" DISTANCE = DISTANCE FROM END OF MAST ARM TO THE EDGE OF THE SIGN PANEL.

D-1, D-3



3.0" Radius, 1.0" Border, White on, Green;
"Radisson Rd NE", D 2K 50% spacing;

D-2, D-4



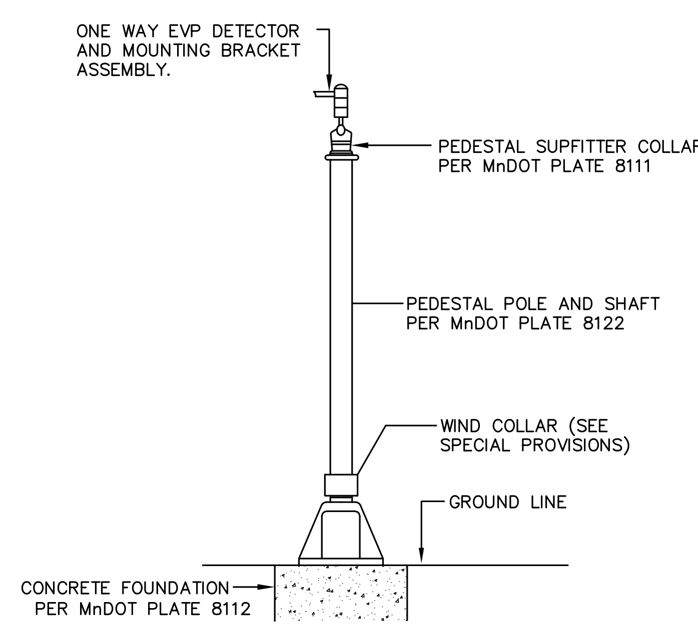
3.0" Radius, 1.0" Border, White on, Green;
"Cloud Dr NE", D 2K 50% spacing;

SIGNING NOTES:

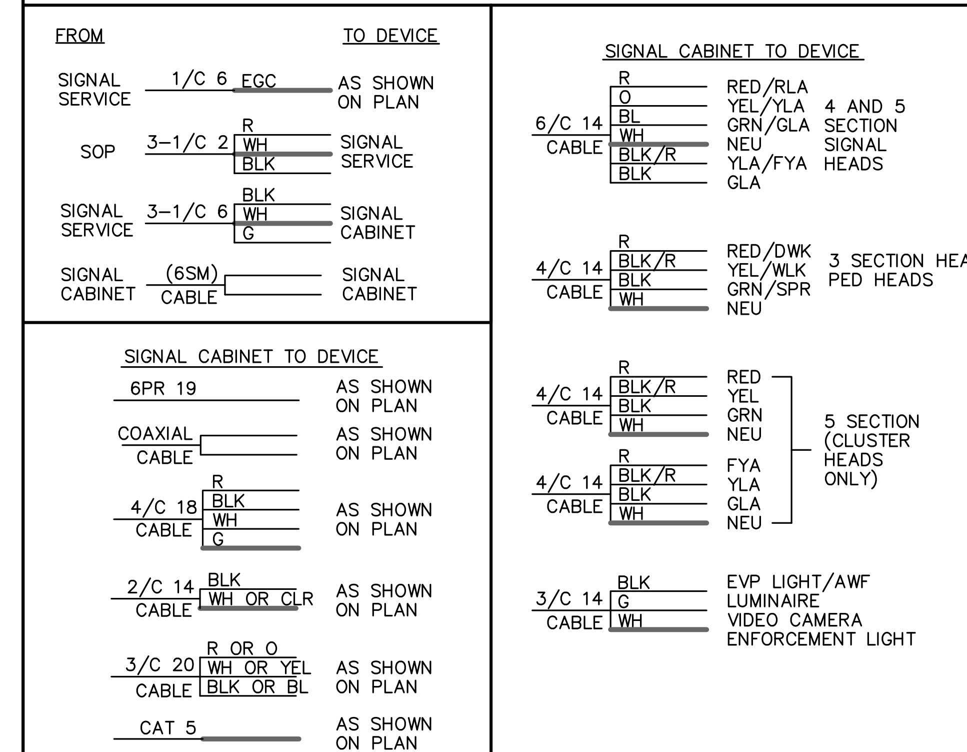
1) COLOR FOR ALL NEW TYPE D SIGNS SHALL BE WHITE LEGEND AND BORDER ON GREEN BACKGROUND, FULLY REFLECTORIZED.
2) SEE CURRENT MnDOT STANDARD SIGNS AND MARKINGS MANUAL FOR STANDARD SIGN DESIGNS, ARROW DETAILS, AND SPLICE PLATE DETAILS.
3) FOR NON-STANDARD SIGN DESIGNS, SIGN LAYOUTS ARE INCLUDED ELSEWHERE ON THIS PLAN SHEET. ALL SIGN DIMENSIONS ARE IN INCHES.
4) SEE STANDARD PLAN 5-297.730 FOR SIGN MOUNTING TO ROUND SUPPORTS (MAST ARM POLES).
SEE STANDARD PLAN 5-297.731 FOR SIGN MOUNTING TO MAST ARM.
5) ALL TRAFFIC CONTROL, MOBILIZATION AND WORK RELATED TO THE INSTALLATION OF THE SIGNING SHOWN IN THE PLANS IS INCIDENTAL.
6) FURNISHING AND INSTALLING NEW TYPE C AND TYPE D SIGNS WILL BE INCLUDED AS PART OF BID ITEM FOR ITEM NO. 2565 (TRAFFIC CONTROL SIGNAL SYSTEM). SEE SPECIAL PROVISIONS.
7) CONTRACTOR SHALL PROVIDE DETAILED SHOP DRAWINGS OF THE NEW TYPE D SIGN PANELS FOR ENGINEER APPROVAL, PRIOR TO FABRICATION OF THESE SIGN PANELS.
8) (1) = MOUNT SIGN PANEL ON TRAFFIC SIGNAL MAST ARM POLE (SEE SIGNAL PLAN INTERSECTION LAYOUT FOR LOCATIONS).

CONDUCTOR AND CABLE SPECIFICATION CHART		
NUMBER OF CONDUCTORS & AWG SIZE	TYPE	Specification Number
1/C 2	INDIVIDUAL SERVICE CONDUCTORS	3815.2B.1
1/C 6	FEEDER AND BRANCH 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

PEDESTAL POLE MOUNTED EVP DETECTOR DETAIL



CONDUCTOR COLOR CODE



NOTES:
ARRANGE AND TERMINATE CONDUCTORS AND CABLES AS SHOWN WITHOUT SPLICE.
NUMBER ONLY MEANS AWG CONDUCTOR SIZE (e.g. 14=14AWG)
1/C MEANS AN INDIVIDUAL CONDUCTOR NOT PART OF A CABLE ASSEMBLY

CABLE LABELING ABBREVIATIONS		
ABBREVIATION	LABEL REFERENCE DSISCRIPTION & EXAMPLE	COMPONENT
X-Y	INDICATION NUMBER 2-1	SIGNAL HEAD
X-Y	LOOP NUMBER D2-1	DETECTOR
X-Y	PUSH BUTTON NUMBER PB2-1	PUSH BUTTON
X-Y	PED INDICATION NUMBER P2-1	PED INDICATION
X-Y	LUMINAIRE NUMBER L1	LUMINAIRE
X-Y	EVP PHASE NUMBER EVP 2+5	EVP DETECTOR
X-Y	EVP LIGHT PHASE NUMBER EVPL 2+5	EVP CON. LIGHT
X-Y	VIDEO DETECTION PHASE V2-1	VIDEO DETECTION
X-Y	RADAR DETECTION PHASE RD2-1	RADAR DETECTION
SS	SIGNAL SERVICE	SERVICE WIRE
CC	CABINET COMMS	COMMS CABLE
FO	FIBER OPTIC	FIBER CABLE
SPARE Y	SPARE WIRE TO POLE NUMB. SPARE1	SPARE WIRE
ELYZ *	ENFORC. LIGHT POLE & DIRECTION	ENFORCEMENT LIGHT
PTZ1	PTZ CAMERA POLE NUMBER PTZ1	PTZ CAMERA
IC	INTERCONNECT CABLE	INTERCONNECT
EGC	EQUIPMENT GROUNDING CONDUCTOR	GROUND

X = SIGNAL SYSTEM PHASE NUMBER; REFER TO THE PLAN
Y = SIGNAL SYSTEM ASSIGNED COMPONENT NUMBER; REFER TO THE PLAN
Z * = DIRECTION
FURNISH AND INSTALL LABELS ON CABLES WITH ABBREVIATIONS SHOWN ON THIS TABLE AND IN ACCORDANCE WITH THE WIRING DIAGRAM.

SAP 002-652-006
SAP 106-020-038
CITY PROJECT 22-08

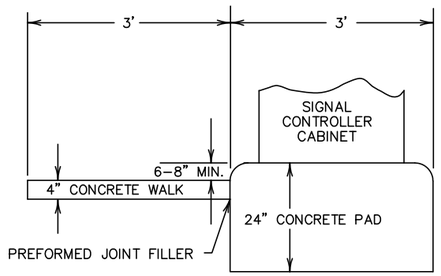
TYPICAL PAD WITH CONTROLLER CABINET AND SERVICE CABINET

SEE INTERSECTION LAYOUT FOR CABLE INFORMATION (NOT TO SCALE)

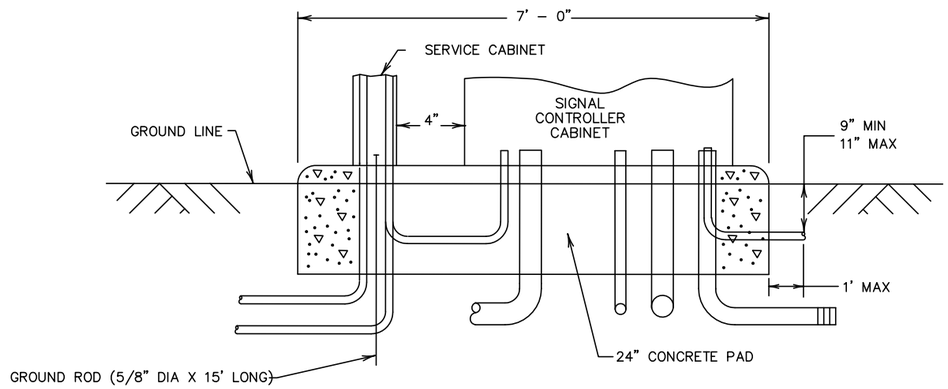
NOTES:

1. THE ANCHOR RODS, NUTS AND WASHERS FOR THE COUNTY FURNISHED CONTROLLER AND CABINET SHALL BE FURNISHED BY THE COUNTY AND INSTALLED BY THE CONTRACTOR.
2. THE UPPER PART OF THE NEW EQUIPMENT PAD SHALL BE BEVELLED OR CHAMFERED IN A NEAT MANNER AS DIRECTED BY THE ENGINEER.
3. THE TOP OF THE CONDUITS SHALL BE THREADED AND CAPPED AFTER INSTALLATION (UNTIL CABLES ARE INSTALLED).
4. CONDUIT SHALL PROJECT A MINIMUM OF 2" ABOVE CONCRETE AND SHALL BE LOCATED INSIDE OF THE CABINET WHERE DIRECTED BY THE ENGINEER, BUT SHALL NOT INTERFERE WITH THE CABINET FUNCTIONS (SUPPORTING MEMBERS, ETC.).
5. CONCRETE MIX 3F52 OR EQUAL SHALL BE USED FOR THE EQUIPMENT PAD AND SIDEWALK.
6. CONDUITS WITH BOTH ENDS TERMINATING WITHIN THE PAD SHALL NOT BE INSTALLED BELOW THE CONCRETE.
7. THE EXACT LOCATION OF CONDUITS WITHIN THE PAD SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.
8. ANCHOR RODS SHALL PROJECT A MINIMUM OF 3" ABOVE THE CONCRETE BUT SHALL NOT INTERFERE WITH THE CABINET FUNCTIONS (SUPPORTING MEMBERS, ETC.).
9. CONTRACTOR SHALL PROVIDE MINIMUM 4-INCH CLEARANCE BETWEEN CONTROLLER AND SERVICE CABINETS ON THE EQUIPMENT PAD FOUNDATION AS SHOWN.

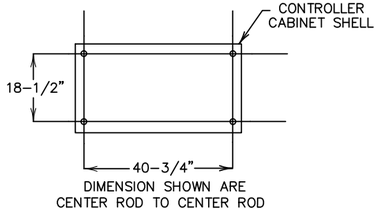
SIDE VIEW



FRONT VIEW



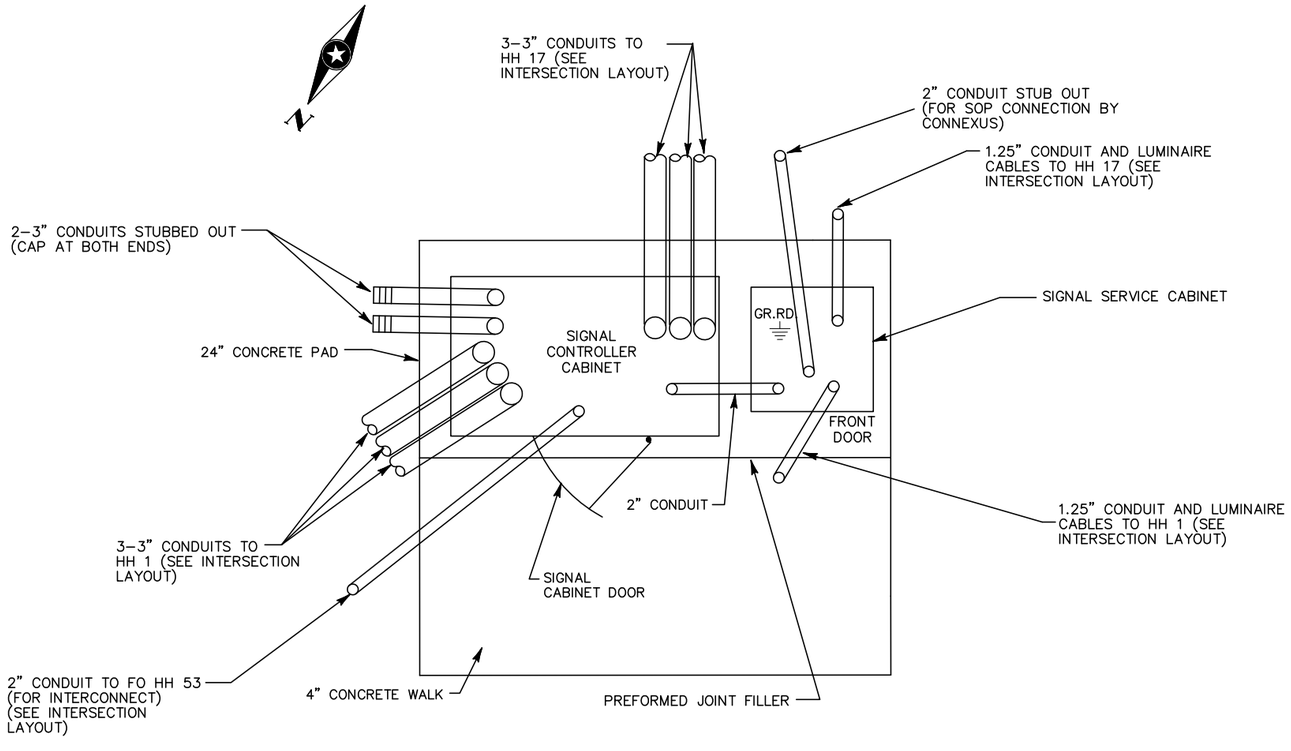
CONTROLLER CABINET TYPE "P" & "R" BOLT PATTERN



DIMENSION SHOWN ARE CENTER ROD TO CENTER ROD

PLAN VIEW

CSAH 52 (RADISSON RD NE) AT CLOUD DRIVE NE



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Name: John M. Gray, PE
Date: November 17, 2022 Lic. No. 22457

CSAH 52 AT CLOUD DRIVE NE
ANOKA COUNTY, MINNESOTA
CITY OF BLAINE

TRAFFIC CONTROL SIGNAL SYSTEM
EQUIPMENT PAD DETAILS
CSAH 52 (RADISSON RD NE) AT CLOUD DR NE

52
of 62

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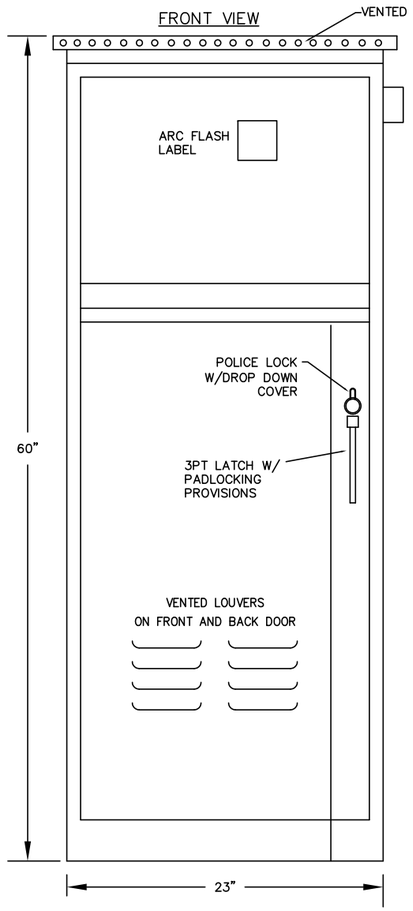
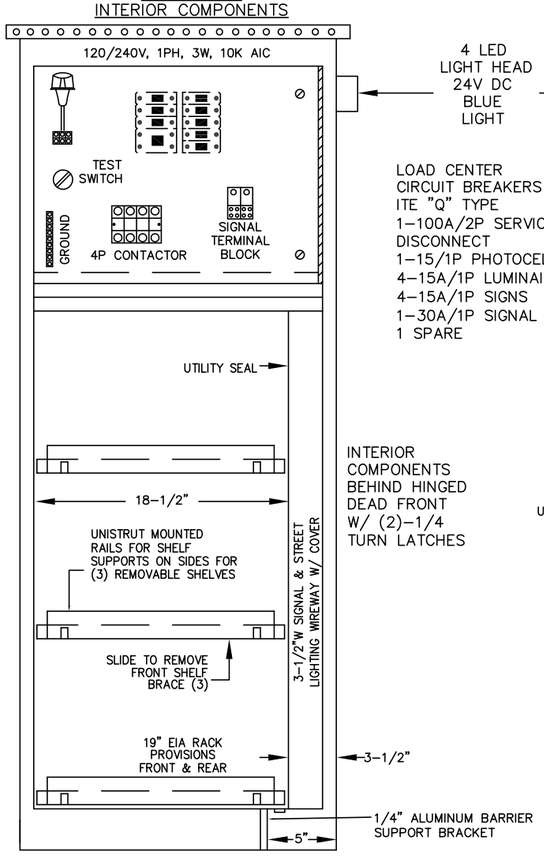
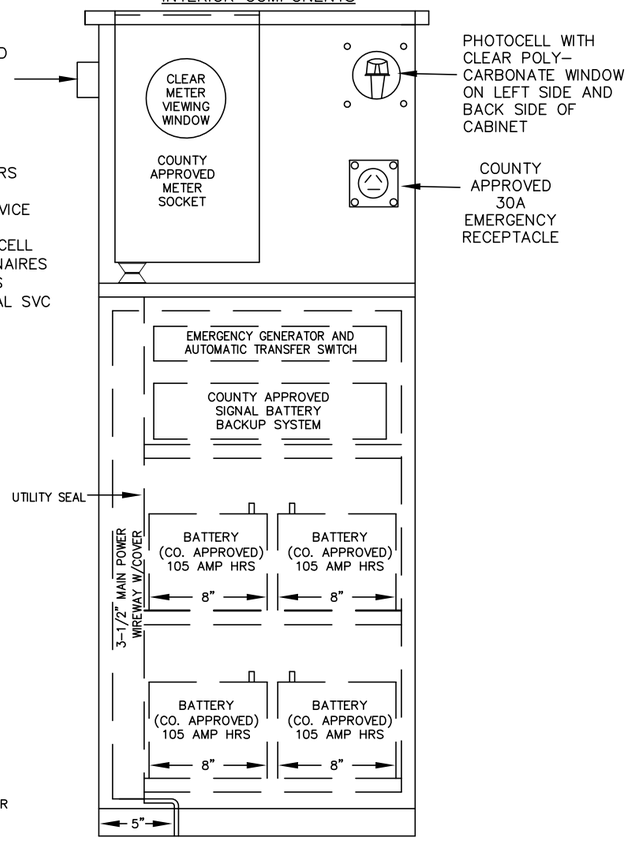


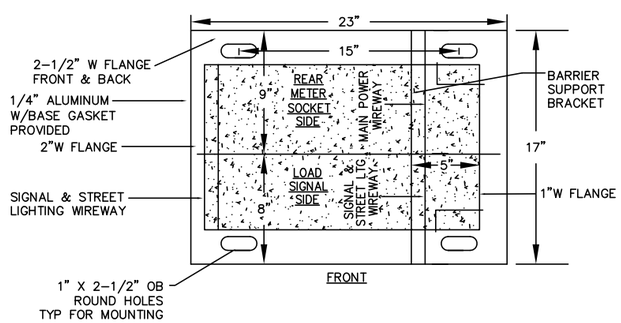


4 LED LIGHT HEAD 24V DC BLUE LIGHT

LOAD CENTER CIRCUIT BREAKERS
ITE "Q" TYPE
1–100A/2P SERVICE DISCONNECT
1–15/1P PHOTOCELL
4–15A/1P LUMINAIRES
4–15A/1P SIGNS
1–30A/1P SIGNAL SVC
1 SPARE

INTERIOR COMPONENTS BEHIND HINGED DEAD FRONT W/ (2)–1/4 TURN LATCHES

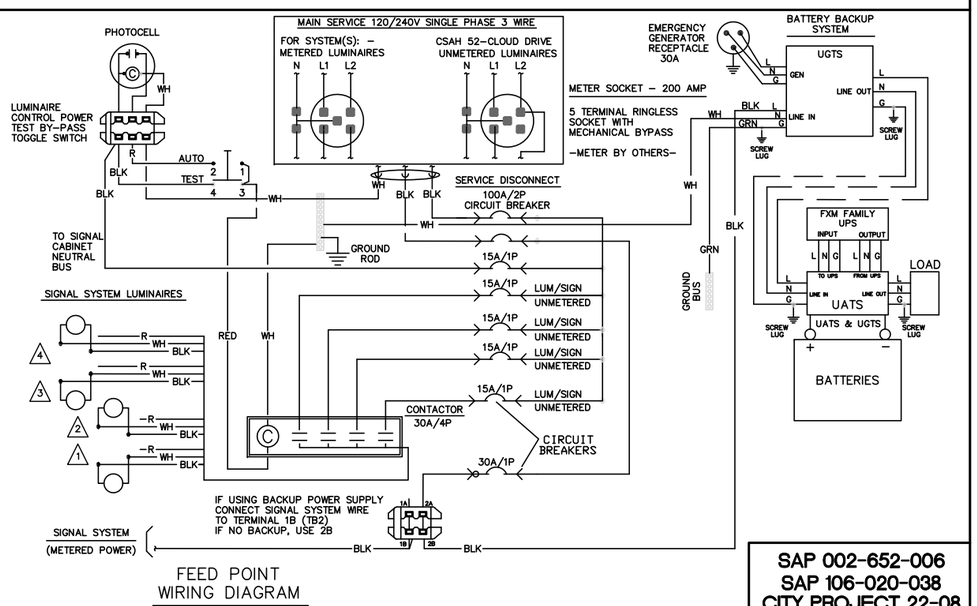




CABINET CONSTRUCTION

–NEMA 3R
–1/8" ALUMINUM 5052–H32
–ANODIZED 30 MINUTE CLEAR
–NEOPRENE GASKETED DOORS
–NON–CORRODING HARDWARE
–ETL LISTED IN ACCORDANCE W/UL508A

SEE SPECIAL PROVISIONS AND STATEMENT OF ESTIMATED QUANTITIES REGARDING SEPARATE PAY ITEM FOR FURNISHING & INSTALLING NEW BATTERY BACK–UP SIGNAL SERVICE CABINET.



FEED POINT WIRING DIAGRAM

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CSAH 52 AT CLOUD DRIVE NE
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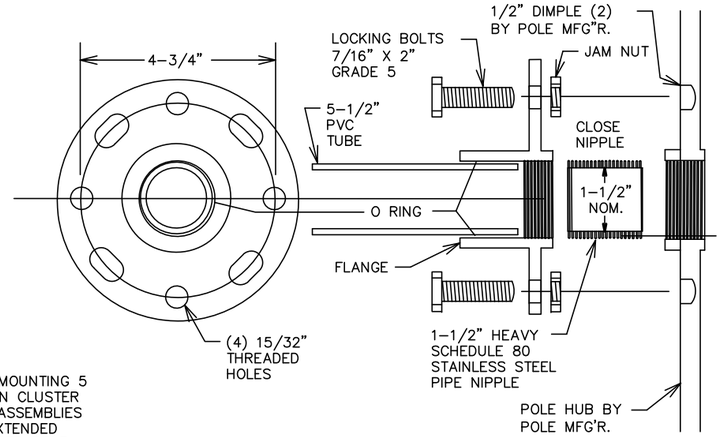
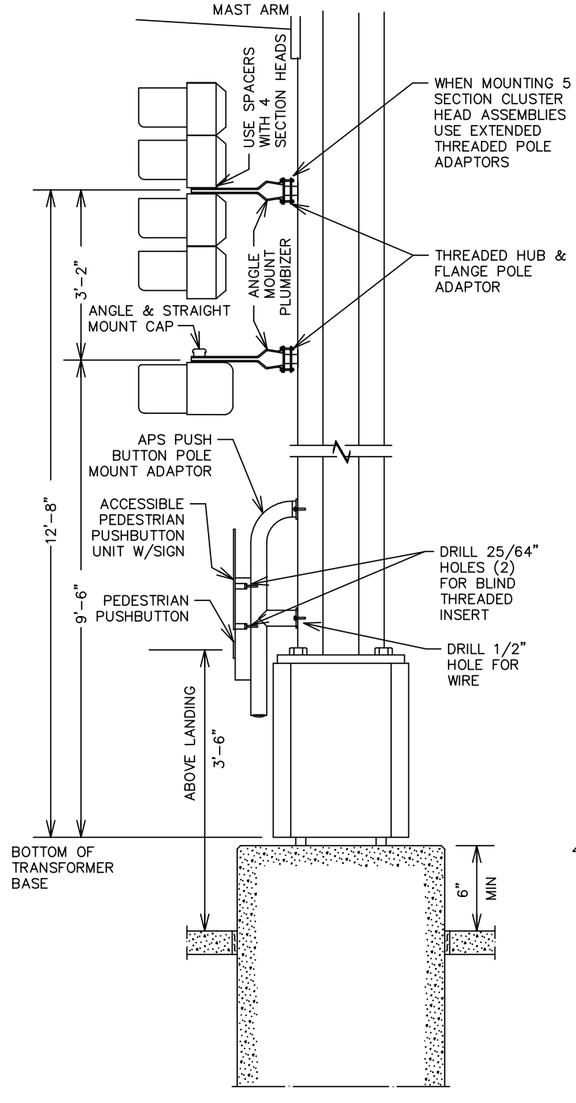
CITY OF BLAINE

TRAFFIC CONTROL SIGNAL SYSTEM
SERVICE CABINET DETAILS
CSAH 52 (RADISSON RD NE) AT CLOUD DR NE

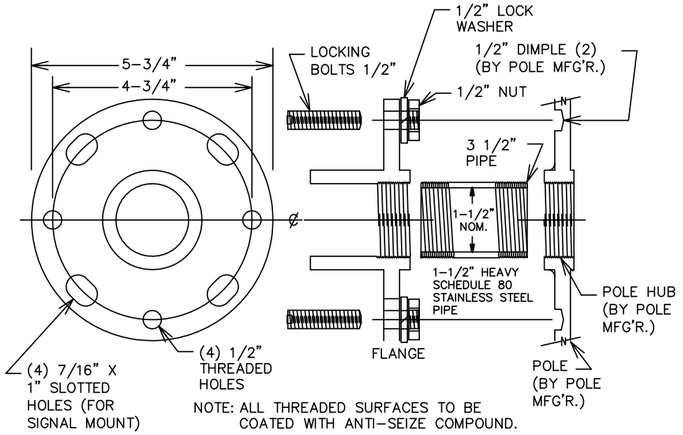


THREADED HUB AND FLANGE POLE ADAPTOR



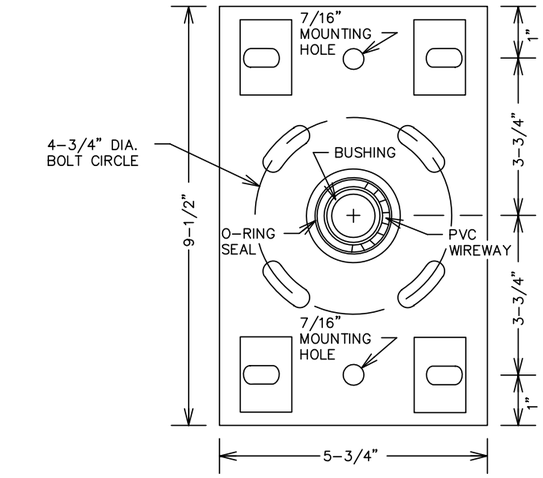
TYPICAL SIGNAL POLE MOUNTING

NOT TO SCALE

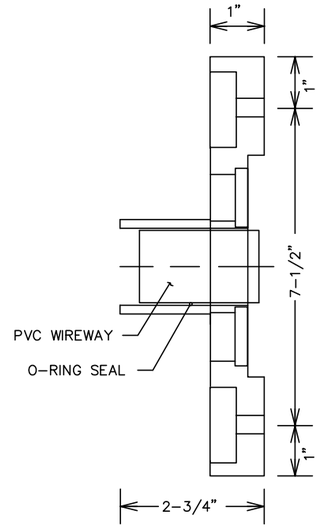


EXTENDED THREADED POLE ADAPTER

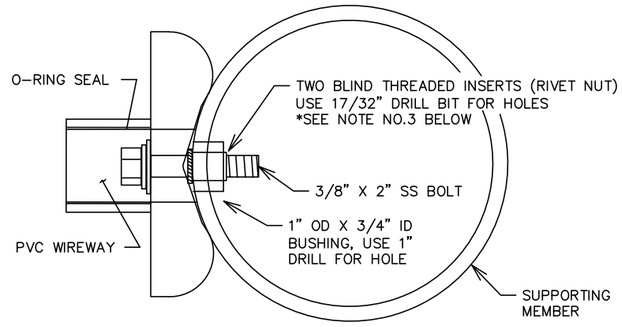
NOTES:
1. ALL THREADED SURFACES TO BE COATED WITH ANTI–SEIZE COMPOUND.
2. USE SIGNAL HEAD MOUNTED SPACERS FOR 4 SECTION POLY HEADS.
3. SEE STANDARD PLATE NUMBER 8123 FOR ADDITIONAL SIGNAL POLE DETAILS.
4. EXTENDED THREADED POLE ADAPTOR ONLY USED WITH 5 SECTION CLUSTER HEADS.



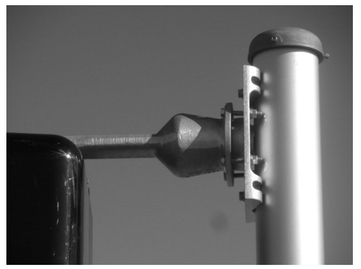
BOLT ON HUB & FLANGE



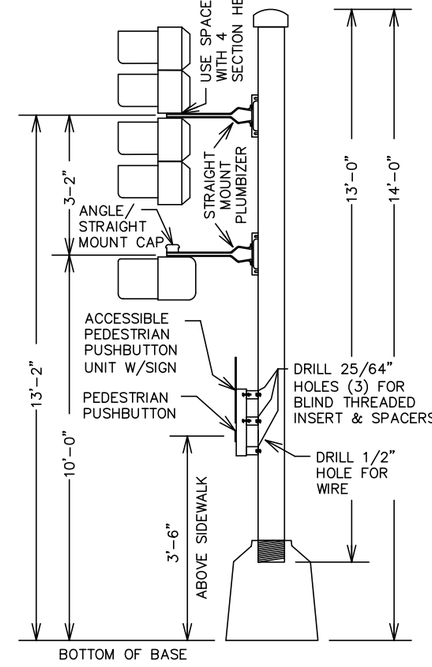
SIDE VIEW



TOP VIEW



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 PEDESTAL MOUNTING

NOT TO SCALE

SAP 002-652-006
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Drawn By	JMG							
Designed By	JMG							
Checked By	JMG							

SEH

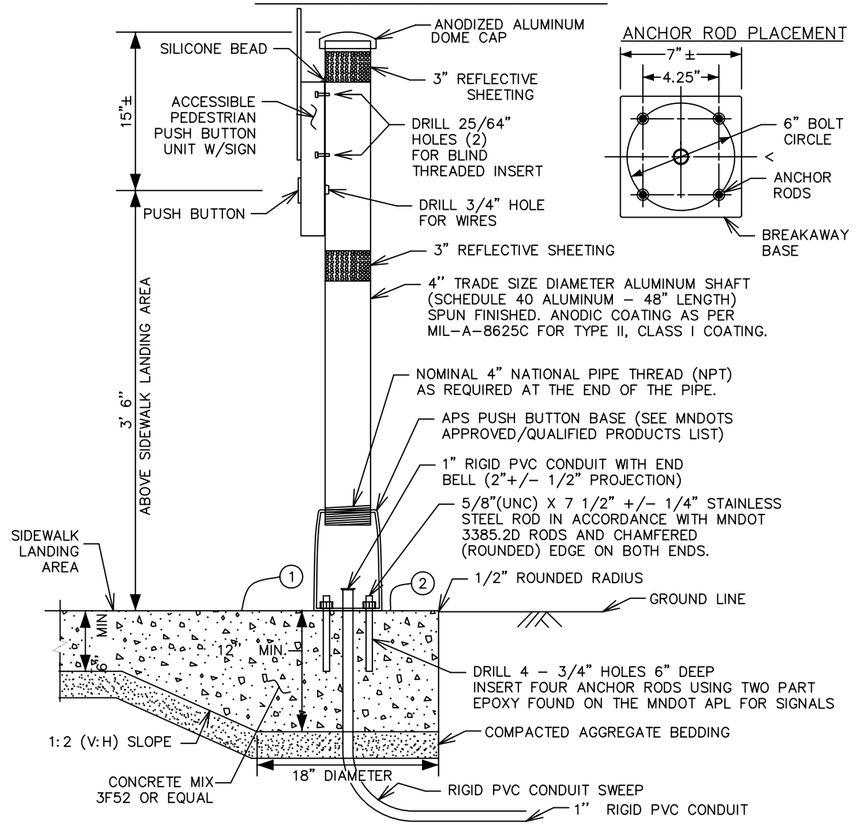
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Date: November 17, 2022 Name: John M. Gray, PE Lic. No. 22457

CSAH 52 AT CLOUD DRIVE NE
ANOKA COUNTY, MINNESOTA
CITY OF BLAINE

TRAFFIC CONTROL SIGNAL SYSTEM
ONE WAY POLE MOUNT DETAILS
CSAH 52 (RADISSON RD NE) AT CLOUD DR NE

APS PUSH BUTTON STATION



NOTES:

PLACEMENT AND ORIENTATION OF THE PUSH BUTTON STATION IS CRITICAL. MOUNT THE BUTTON SO THAT THE FACE IS PARALLEL WITH THE ASSOCIATED CROSSWALK. SCREW IN SHAFT TO A TIGHTENED POSITION BEFORE MOUNTING ACCESSIBLE PEDESTRIAN PUSH BUTTON UNIT TO THE SHAFT.

ORIENT ACCESS OPENING ON THE BREAKAWAY PEDESTAL DIRECTLY BELOW THE APS BUTTON.

PLUMB THE PUSH BUTTON STATION WITH LEVELING SHIMS IN ACCORDANCE WITH STANDARD PLATE 8129.

INSTALL BLIND THREADED INSERTS USING MANUFACTURER'S SPECIFIC INSERTION TOOL.

USE ZINC PLATED STEEL 1/4 – 20 UNC BLIND THREADED INSERTS SUITABLE FOR MOUNTING ON SURFACE WALL THICKNESS OF .337. APPROVED BLIND INSERTS ARE LISTED ON MNDOT'S APPROVED/QUALITY PRODUCTS LIST WEBSITE FOR TRAFFIC SIGNALS.

USE APS 1/4 – 20 STAINLESS STEEL MOUNTING BOLTS. APPLY BRUSH ON ANTI SEIZE COMPOUND TO BOLTS PRIOR TO ASSEMBLY.

APPLY A BEAD OF 100% SILICONE SEALANT ALONG THE TOP OF THE PUSH BUTTON UNIT WHERE IT COMES IN CONTACT WITH THE 4" SHAFT.

USE WHITE REFLECTIVE SHEETING AT INTERSECTION CORNERS AND YELLOW REFLECTIVE SHEETING IN CENTER MEDIANS. APPROVED TUBE DELINEATOR SHEETING IS LISTED ON MNDOT'S APPROVED/QUALIFIED PRODUCTS LIST WEBSITE FOR SIGNING.

AN 18" X 6" FIBER FORMING TUBE MAY BE USED FOR THE LOWER HALF OF THE FOUNDATION WHEN CONDITIONS DO NOT ALLOW FOR THE 18" X 6" HOLE TO STAND OPEN.

(1) THE PUSH BUTTON STATION FOUNDATION IS MONOLITHIC (POURED AT ONE TIME) WITH THE SIDEWALK. PROVIDE A 1:2 (V:H) SLOPE GRADE WHERE THE 6" MIN SIDEWALK DEPTH TRANSITIONS TO THE 12" MIN FOUNDATION DEPTH. MAINTAIN THE COMPACTED AGGREGATE BEDDING AND THICKNESS USED FOR THE SIDEWALK THROUGHOUT THE SLOPE AND FOUNDATION GRADING. PROVIDE 1:2 (V:H) SLOPE GRADING 360 DEGREES FOR THE TRANSITION FROM THE SIDEWALK TO THE FOUNDATION WHEN THE FOUNDATION IS NOT LOCATED NEAR EDGE OF SIDEWALK AND IS SURROUNDED BY CONCRETE WALK.

(2) ENSURE CONCRETE CONTROL JOINTS AND EDGE OF CONCRETE WALK ARE A MINIMUM 9" FROM THE CENTER OF THE PUSH BUTTON FOUNDATION.

TYPICAL APS PEDESTRIAN PUSH BUTTON LOCATION

THIS IS A GENERAL DETAIL INTENDED TO SHOW THE REQUIREMENTS OF APS PUSH BUTTON LOCATION. FOR PROJECT SPECIFIC INFORMATION REGARDING PEDESTRIAN RAMP LAYOUT AND PUSH BUTTON LOCATIONS, SEE THE PLAN.

SUPPLEMENTAL GUIDANCE FOR CONSTRUCTING COMPLIANT APS PUSH BUTTONS:

(1) THE FACE OF THE BUTTON SHALL BE PARALLEL WITH THE OUTSIDE EDGE OF CROSSWALK.

(2) A MINIMUM 4 FT X 4 FT LANDING AREA SHALL BE PROVIDED ADJACENT TO EACH BUTTON, WITH A 2 PERCENT MAXIMUM SLOPE IN ALL DIRECTIONS.

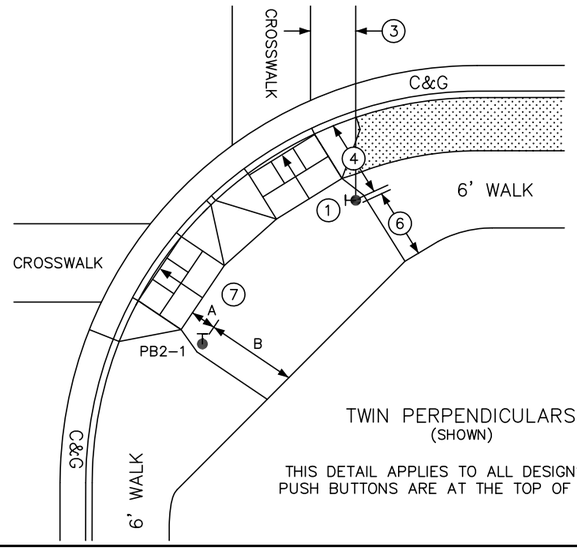
(3) BUTTONS SHALL BE WITHIN 5 FT OF THE OUTSIDE EDGE OF THE CROSSWALK.

(4) BUTTONS SHALL BE BETWEEN 1.5 FT AND 10 FT FROM THE BACK OF CURB OR EDGE OF ROADWAY, MEASURED IN THE DIRECTION OF TRAVEL. STANDALONE PUSH BUTTON STATIONS SHOULD BE 4' MINIMUM FROM THE BACK OF CURB TO AVOID KNOCKDOWNS.

(5) BUTTONS SHALL BE AT LEAST 10 FT APART.

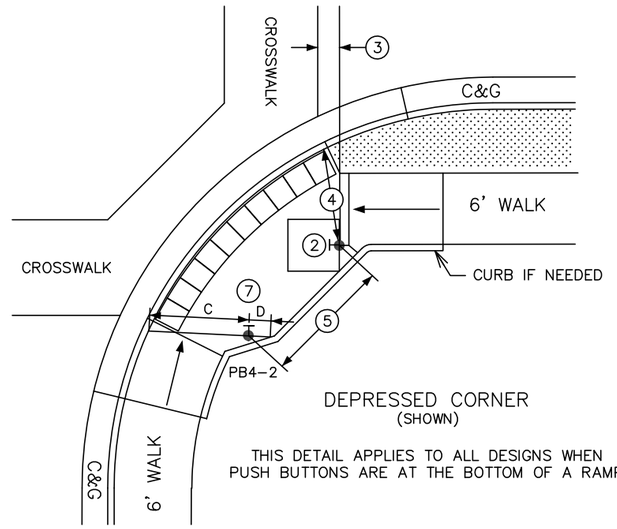
(6) PROVIDE A MAINTENANCE ACCESS ROUTE (MAR) WHEREVER POSSIBLE FOR SNOW REMOVAL PURPOSES. A MAR REQUIRES A 6 FT MINIMUM CLEAR DISTANCE BETWEEN A PUSH BUTTON AND ANY OBSTRUCTIONS,INCLUDING BUILDINGS, V–CURB, ELECTRICAL FOUNDATIONS, SIGNAL CABINETS, OR ANOTHER PUSH BUTTON.

(7) BUTTON SHOULD BE 2 FT MINIMUM FROM RAMP GRADE BREAK AND BACK OF WALK.



TWIN PERPENDICULARS
(SHOWN)

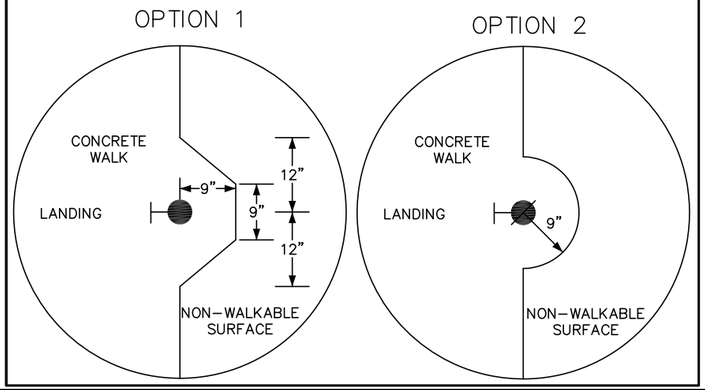
THIS DETAIL APPLIES TO ALL DESIGNS WHEN PUSH BUTTONS ARE AT THE TOP OF A RAMP



DEPRESSED CORNER
(SHOWN)

THIS DETAIL APPLIES TO ALL DESIGNS WHEN PUSH BUTTONS ARE AT THE BOTTOM OF A RAMP

CONTRACTOR MUST USE OPTION 1 OR 2 WHEN THE APS PUSH BUTTON IS SHOWN AT THE EDGE OF WALK. OPTION USED (OR SELECTED) MUST BE THE SAME THROUGHOUT THE ENTIRE PROJECT.



SIGNAL CONTROL POINTS			DISTANCE TO FRONT OF LANDING (FT)	DISTANCE TO BACK OF LANDING (FT)
SIGNAL NO.	X	Y		
PB2–1	–	–	A	B
PB4–2	–	–	C	D

A – DISTANCE MEASURED FROM THE PUSH BUTTON TO THE FRONT OF LANDING/TOP OF RAMP

B – CLEAR DISTANCE MEASURED FROM THE PUSH BUTTON TO THE BACK OF LANDING/EDGE OF WALK

C – CLEAR DISTANCE MEASURED FROM THE PUSH BUTTON TO THE OUTSIDE EDGE OF DOMES IN THE DIRECTION OF TRAVEL

D – CLEAR DISTANCE FROM THE PUSH BUTTON TO THE BACK OF LANDING MEASURED IN THE OPPOSITE DIRECTION OF TRAVEL

SAP 002-652-006
SAP 106-020-038
CITY PROJECT 22-08

SEH Project	ANOKC 163661	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
Drawn By	JMG						
Designed By	JMG						
Checked By	JMG						

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Date: November 17, 2022
Name: John M. Gray, PE
Lic. No. 22457

CSAH 52 AT CLOUD DRIVE NE
ANOKA COUNTY, MINNESOTA
CITY OF BLAINE

TRAFFIC CONTROL SIGNAL SYSTEM
APS PUSH BUTTON STATION DETAILS
CSAH 52 (RADISSON RD NE) AT CLOUD DR NE

PVC LOOP DETECTORS			
NUMBER	SIZE (FT.)	LOCATION	FUNCTION
D1–1	2–6x6	15' & 45'	1
D1–2	2–6x6	0' & 30'	7
D2–1	6x6	475'	1
D2–2	6x6	475'	1
D4–1	6x6	120'	3,8
D4–2	2–6x6	0' & 15'	7
D4–3	2–6x6	0' & 15'	1
D5–1	2–6x6	15' & 45'	1
D5–2	2–6x6	0' & 30'	1
D6–1	6x6	475'	1
D6–2	6x6	475'	1
D8–1	6x6	120'	3,8
D8–2	6x6	120'	3,8
D8–3	2–6x6	0' & 15'	7
D8–4	2–6x6	0' & 15'	1

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

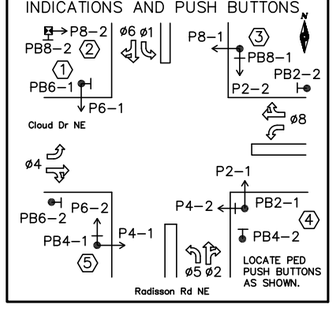
LOOP DETECTORS FUNCTIONS:

1) CALL AND EXTEND
3) EXTEND ONLY
7) DELAYED CALL, IMMEDIATE EXTEND
8) CARRY OVER (STRETCH)

SIGNAL SYSTEM OPERATIONS:

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

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS



METER ADDRESS = 2199 CLOUD DRIVE NE.

MATCH LINE "A" – SEE NEXT SHEET

HH 53 TO NORTH (TO CSAH 52–CSAH 14)
2" CONDUIT–INPLACE
1–12 SM FO CABLE–INPLACE

CSAH 52 (RADISSON RD NE) (55 mph)

2–3" CONDUITS
3–6/c 14
5–4/c 14
(*) 1–3/c 14
6–2/c 14
(*) 2–3/c 20
1–3/c 14 (LUM)
1–1/c 6 (GRD)

2" CONDUIT
2–2/c 14

2" CONDUIT
5–2/c 14
1–1/c 6 (GRD)

CLOUD DRIVE NE (30 mph)

2–3" CONDUITS
3–6/c 14
5–4/c 14
(*) 1–3/c 14
8–2/c 14
(*) 2–3/c 20
1–3/c 14 (LUM)
1–1/c 6 (GRD)

30' STREET LIGHT POLE AND LUMINAIRE (TO BE REMOVED BY CONNEXUS)

HH 53 (INPLACE)

2–3" CONDUITS
3–6/c 14
6–4/c 14
(*) 1–3/c 14
11–2/c 14
(*) 2–3/c 20
1–3/c 14 (LUM)
1–1/c 6 (GRD)

(*) ø8 EVP
(*) ø6.1 EVP
(*) ø2.5 EVP
(*) ø4 EVP

F & I — APS PB STATION (SEE DETAILS
1–APS PB & SIGN (RT ARROW) (PB2–2)
EXTEND INTO HH 7:
1" CONDUIT
1–2/c 14
1–1/c 6 (INS GR)

F & I — APS PB STATION (SEE DETAILS
1–APS PB & SIGN (RT ARROW) (PB4–2)
EXTEND INTO HH 9:
1" CONDUIT
1–2/c 14
1–1/c 6 (INS GR)

30' STREET LIGHT POLE AND LUMINAIRE (TO BE REMOVED BY CONNEXUS)

(B) INPLACE — GROUND MOUNTED TRANSFORMER (TO BE RELOCATED BY CONNEXUS) (SOP)
F & I — 2" CONDUIT TO TRANSFORMER 3–1/c 2

2–3" CONDUITS
3–6/c 14
3–4/c 14
(*) 1–3/c 14
4–2/c 14
(*) 1–3/c 20
1–3/c 14 (LUM)
1–1/c 6 (GRD)

HH 53 TO HH 54:
2" CONDUIT–INPLACE
1–12 SM FO CABLE–INPLACE

HH 54 (INPLACE)

3–3" CONDUITS
6–6/c 14
8–4/c 14
(*) 2–3/c 14
11–2/c 14
(*) 3–3/c 20
2–3/c 14 (LUM)
1–1/c 6 (GRD)

2–3" CONDUITS
3–6/c 14
3–4/c 14
(*) 1–3/c 14
6–2/c 14
(*) 1–3/c 20
1–3/c 14 (LUM)
1–1/c 6 (GRD)

2" CONDUIT
1–2/c 14
(*) 1–3/c 20
(*) 1–1/c 6 (GRD)

F & I — APS PB STATION (SEE DETAILS
1–APS PB & SIGN (RT ARROW) (PB6–2)
EXTEND INTO HH 14:
1" CONDUIT
1–2/c 14
1–1/c 6 (INS GR)

(*) 2" CONDUIT
(*) 1–3/c 20
(*) 1–1/c 6 (GRD)

(6) F & I — (*) PEDESTAL FOUNDATION
(*) 10' PEDESTAL POLE, BASE, WIND COLLAR
(*) TWO WAY EVP DETECTOR–MOUNT ATOP SLIPFITTER COLLAR (ø4)
EXTEND INTO HH 16:
(*) 2" CONDUIT
(*) 1–3/c 20
(*) 1–1/c 6 (INS GR)

HH 54 TO SOUTH (TO CSAH 52–119TH AVE)
2" CONDUIT–INPLACE
1–12 SM FO CABLE–INPLACE

2" CONDUIT
2–2/c 14

CSAH 52 (RADISSON RD NE) (55 mph)

RADISSON RD NE

MATCH LINE "B" – SEE NEXT SHEET

SEE SHEET 58 FOR GENERAL NOTES, POLE NOTES, AND EQUIPMENT PAD NOTES.

LED SIGNAL HEADS				
SIGNAL HEAD	ALL SIGNAL INDICATIONS SHALL BE 12".			
	R	Y	FYA	G
1–1, 1–2	←	←	←	←
2–1, 2–2, 2–3	●	●		●
4–1, 4–2, 4–3	●	●		●
5–1, 5–2	←	←	←	←
6–1, 6–2, 6–3	●	●		●
8–1, 8–2, 8–3	●	●		●

FYA = FLASHING YELLOW ARROW

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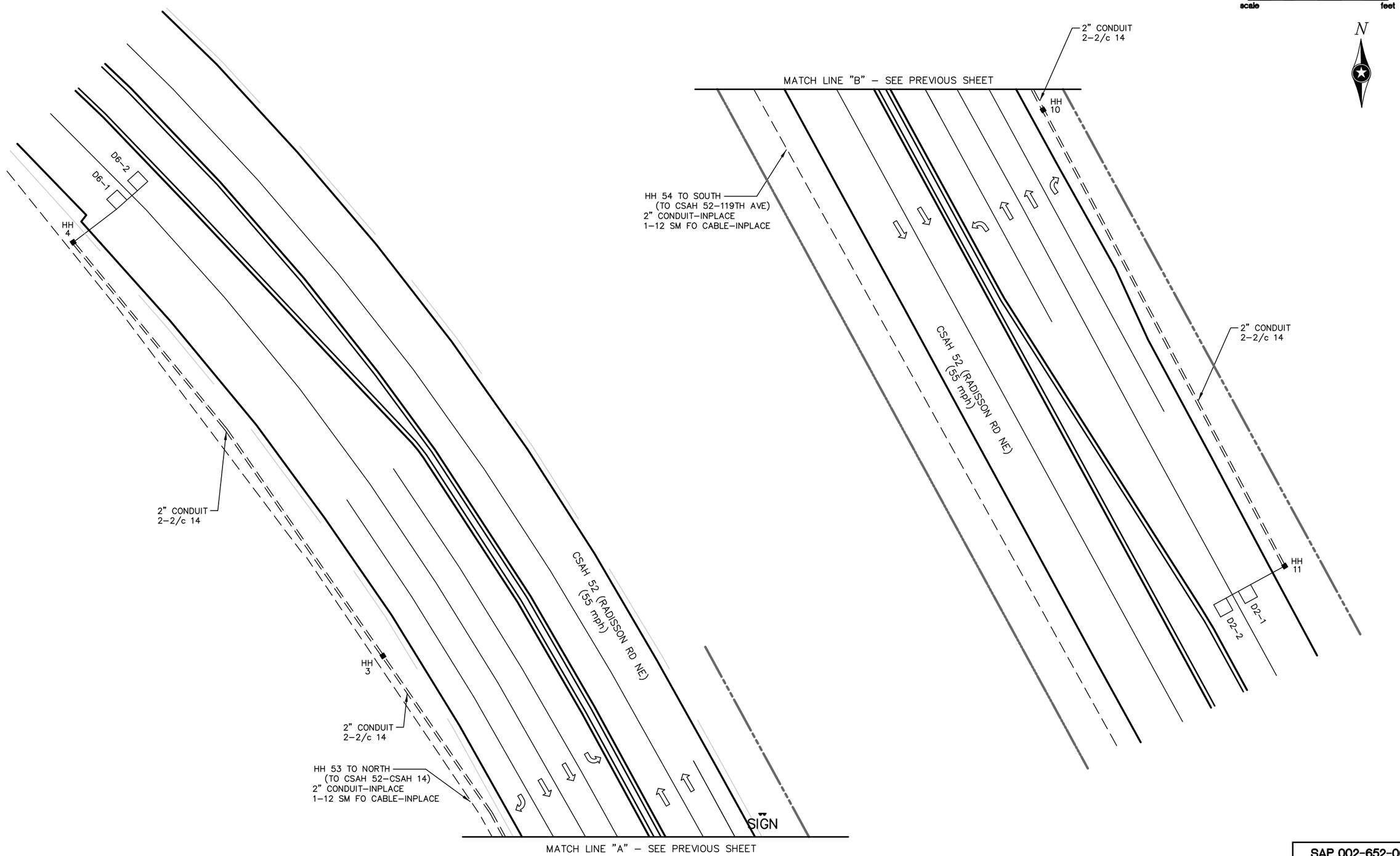
CSAH 52 AT CLOUD DRIVE NE

ANOKA COUNTY, MINNESOTA
CITY OF BLAINE

TRAFFIC CONTROL SIGNAL SYSTEM
INTERSECTION LAYOUT
CSAH 52 (RADISSON RD NE) AT CLOUD DR NE



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Designed By	JMG								Date: November 17, 2022 Lic. No. 22457
Checked By	JMG								

CSAH 52 AT CLOUD DRIVE NE
ANOKA COUNTY, MINNESOTA
CITY OF BLAINE

TRAFFIC CONTROL SIGNAL SYSTEM
INTERSECTION LAYOUT MATCH LINES
CSAH 52 (RADISSON RD NE) AT CLOUD DR NE

NOTES:

1) LOCATION OF FOUNDATIONS, LOOP DETECTORS, HANDHOLES, AND PUSH BUTTON STATIONS SHALL BE DETERMINED IN FIELD BY THE ENGINEER.
2) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
3) NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS (SEE SPECIAL PROVISIONS).
4) A 3/4" HALF COUPLING, 3/4" PIPE NIPPLE & CONDUIT OUTLET BODY SHALL BE FURNISHED AND INSTALLED 6 FEET FROM THE END OF EACH MAST ARM (FOR EVP).
5) THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE POWER COMPANY TO ARRANGE FOR THE POWER CONNECTION (CONNEXUS). SEE SPECIAL PROVISIONS.
6) SEE SPECIAL PROVISIONS & DETAILS REGARDING SIGNS TO BE FURNISHED AND INSTALLED BY CONTRACTOR (INCLUDED AS PART OF THE "TRAFFIC CONTROL SIGNAL SYSTEM" PAY ITEM).
7) EACH PEDESTRIAN INDICATION SHALL BE ONE SECTION LED COUNTDOWN TIMER "HAND/WALKING PERSON" INDICATION.
8) EACH SIGNAL FACE SHALL HAVE A BACKGROUND SHIELD.
9) SEE DETAILS, SPECIAL PROVISIONS & STATEMENT OF ESTIMATED QUANTITIES REGARDING BATTERY BACK-UP SIGNAL SERVICE CABINET TO BE FURNISHED AND INSTALLED BY CONTRACTOR (SEPARATE FROM ITEM NO. 2565 FOR THIS SIGNAL SYSTEM).
10) LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) #12 AWG IN 3/4" N.M.C. SEE SPECIAL PROVISIONS.
11) (*) DENOTES ITEMS TO BE INCLUDED AS PART OF THE PAY ITEM FOR ITEM INO. 2565 (EMERGENCY VEHICLE PREEMPTION SYSTEM). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
12) (**) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECT). SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
13) ALL CABLES AND CONDUCTORS SHALL BE NEW (FURNISHED AND INSTALLED BY THE CONTRACTOR).
14) NO SPLICING IS ALLOWED ON ANY CABLE OR CONDUCTOR BETWEEN THE CONTROLLER/SERVICE CABINETS AND EACH POLE OR MAST ARM MOUNTED COMPONENT (EXCEPT THAT LOOP DETECTORS SPLICES ARE ALLOWED IN ADJACENT HANDHOLES ONLY).

(1) F & I
- PA100 POLE FOUNDATION
- TYPE PA100-A-15-D30-9 (DAVIT AT 350 DEG)
- LUMINAIRE-LED
- 1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'
- 2-ANGLE MOUNT SIGNALS-POLE MOUNTED 90 DEG AND 180 DEG
- 1-ANGLE MOUNT C.D. PED INDICATION-POLE MOUNTED AT 90 DEG (P6-1)
- 1-APS PB, SIGN (LT ARROW) AND APS MAST ARM POLE ADAPTOR (PB6-1)
- TYPE D SIGN PANEL-OVERHEAD (D-1)
- (*) ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (ø8)
- EXTEND INTO HH 1:
- 3" CONDUIT
- 3-6/c 14 (INCLUDING 1 SPARE)
- 2-4/c 14
- (*) 1-3/c 14
- 1-2/c 14
- (*) 1-3/c 20
- 1-3/c 14 (LUM)
- 2-1/c 6 (GRD)

(2) F & I
- PEDESTAL FOUNDATION
- 13' PEDESTAL POLE, BASE, WIND COLLAR
- 1-STRAIGHT MOUNT C.D. PED INDICATION (P8-2)
- 1-APS PB, SIGN (RT ARROW), AND POLE SPACERS (PB8-2)
- EXTEND INTO HH 2:
- 3" CONDUIT
- 1-4/c 14
- 1-2/c 14
- 2-1/c 6 (GRD)

(3) F & I
- PA100 POLE FOUNDATION
- TYPE PA100-A-55-D30-9 (DAVIT AT 350 DEG)
- LUMINAIRE-LED
- 1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'
- 2-STRAIGHT MOUNT SIGNALS-OVERHEAD AT 11' & 23'
- 2-ANGLE MOUNT SIGNALS-POLE MOUNTED 90 DEG AND 180 DEG
- 2-ANGLE MOUNT C.D. PED INDICATIONS-POLE MOUNTED 90 DEG AND 180 DEG
- 1-APS PB, SIGN (LT ARROW) AND APS MAST ARM POLE ADAPTOR (PB8-1)
- R6-1L (ONE WAY LEFT) SIGN-POLE MOUNTED 0 DEG
- R6-1R (ONE WAY RIGHT) SIGN-POLE MOUNTED 180 DEG
- R10-X12 SIGN PANEL-ADJACENT TO 5-1
- TYPE D SIGN PANEL-OVERHEAD (D-2)
- (*) ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (ø2,5)
- (*) ONE WAY EVP DETECTOR-POLE MOUNTED 90 DEG (ø6,1)
- EXTEND INTO HH 6:
- 3" CONDUIT
- 3-6/c 14 (INCLUDING 1 SPARE)
- 5-4/c 14
- (*) 1-3/c 14
- 1-2/c 14
- (*) 2-3/c 20
- 1-3/c 14 (LUM)
- 2-1/c 6 (GRD)

(4) F & I
- PA100 POLE FOUNDATION
- TYPE PA100-A-35-D30-9 (DAVIT AT 350 DEG)
- LUMINAIRE-LED
- 1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'
- 2-ANGLE MOUNT SIGNALS-POLE MOUNTED 90 DEG AND 180 DEG
- 2-ANGLE MOUNT C.D. PED INDICATIONS-POLE MOUNTED 90 DEG AND 180 DEG
- 1-APS PB, SIGN (LT ARROW) AND APS MAST ARM POLE ADAPTOR (PB2-1)
- TYPE D SIGN PANEL-OVERHEAD (D-3)
- (*) ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (ø4)
- EXTEND INTO HH 9:
- 3" CONDUIT
- 3-6/c 14 (INCLUDING 1 SPARE)
- 3-4/c 14
- (*) 1-3/c 14
- 1-2/c 14
- (*) 1-3/c 20
- 1-3/c 14 (LUM)
- 1-1/c 6 (GRD)

(5) F & I
- PA100 POLE FOUNDATION
- TYPE PA100-A-55-D30-9 (DAVIT AT 350 DEG)
- LUMINAIRE-LED
- 1-ANGLE MOUNT SIGNAL-OVERHEAD AT 0'
- 2-STRAIGHT MOUNT SIGNALS-OVERHEAD AT 11' & 23'
- 2-ANGLE MOUNT SIGNALS-POLE MOUNTED 90 DEG AND 180 DEG
- 2-ANGLE MOUNT C.D. PED INDICATIONS-POLE MOUNTED 90 DEG AND 180 DEG
- 1-APS PB, SIGN (LT ARROW) AND APS MAST ARM POLE ADAPTOR (PB4-1)
- R6-1L (ONE WAY LEFT) SIGN-POLE MOUNTED 0 DEG
- R6-1R (ONE WAY RIGHT) SIGN-POLE MOUNTED 180 DEG
- R10-X12 SIGN PANEL-ADJACENT TO 1-1
- TYPE D SIGN PANEL-OVERHEAD (D-4)
- (*) ONE WAY EVP DETECTOR & LED CONFIRMATION LIGHT (ø6,1)
- EXTEND INTO HH 14:
- 3" CONDUIT
- 3-6/c 14 (INCLUDING 1 SPARE)
- 5-4/c 14
- (*) 1-3/c 14
- 1-2/c 14
- (*) 1-3/c 20
- 1-3/c 14 (LUM)
- 2-1/c 6 (GRD)

(A) INSTALL - CONTROLLER AND CABINET (FURNISHED BY COUNTY)

F & I
- EQUIPMENT PAD FOUNDATION
- BBU SIGNAL SERVICE CABINET
- BETWEEN CONTROLLER CABINET AND SERVICE CABINET:
- METERED SIGNAL SERVICE
- 2" CONDUIT
- 3-1/c 6
- CONTROLLER CABINET TO HH 1:

2-3" CONDUITS	3" CONDUIT
3-6/c 14	3-6/c 14
5-4/c 14	3-4/c 14
(*) 1-3/c 14	(*) 1-3/c 14
8-2/c 14	4-2/c 14
(*) 2-3/c 20	(*) 1-3/c 20

- 1-1/c 6 (GRD)
- CONTROLLER CABINET TO HH 17:

3" CONDUIT	2-3" CONDUITS
3-6/c 14	3-6/c 14
3-4/c 14	5-4/c 14
(*) 1-3/c 14	(*) 1-3/c 14
6-2/c 14	5-2/c 14
(*) 1-3/c 20	(*) 2-3/c 20

- 1-1/c 6 (GRD)

F & I
- SERVICE CABINET TO HH 1:
- 1.25" CONDUIT
- UNMETERED STREET LIGHT SERVICE
- 2-3/c 14 (LUM)
- SERVICE CABINET TO HH 17:
- 1.25" CONDUIT
- UNMETERED STREET LIGHT SERVICE
- 2-3/c 14 (LUM)
- STUB OUT 2" CONDUIT FROM SERVICE CABINET (FOR POWER CONNECTION BY CONNEXUS)
- STUB OUT 2-3" CONDUITS FROM CONTROLLER CABINET TO EAST (CAP BOTH ENDS-FOR FUTURE USE)
- CONTROLLER CABINET TO FO HH 53:
- (**) 2" CONDUIT
- (**) 1-6 SM FO PIGTAIL CABLE

SAP 002-652-006
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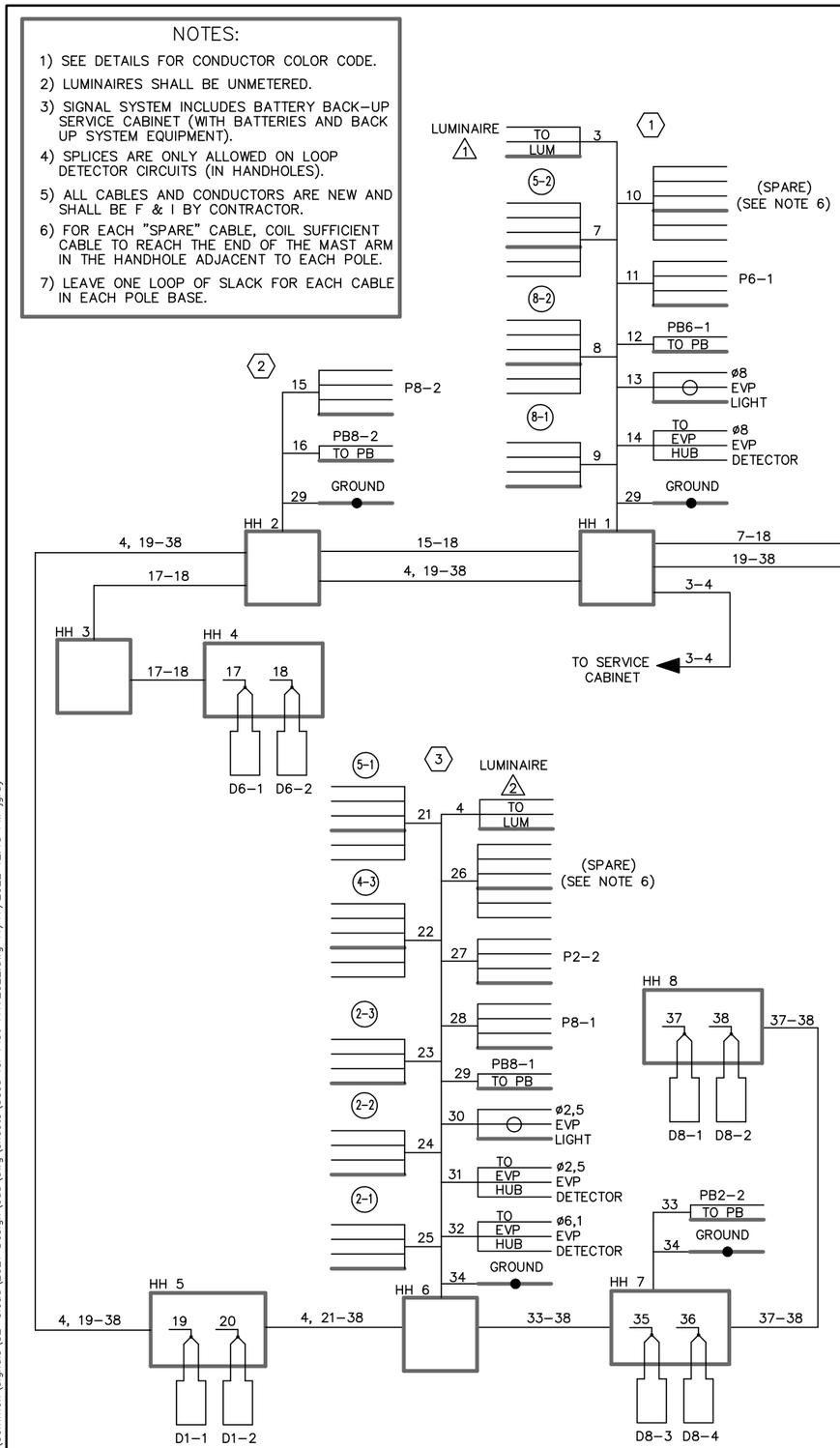
CSAH 52 AT CLOUD DRIVE NE
ANOKA COUNTY, MINNESOTA
CITY OF BLAINE

TRAFFIC CONTROL SIGNAL SYSTEM
SIGNAL SYSTEM NOTES
CSAH 52 (RADISSON RD NE) AT CLOUD DR NE

NOTES:

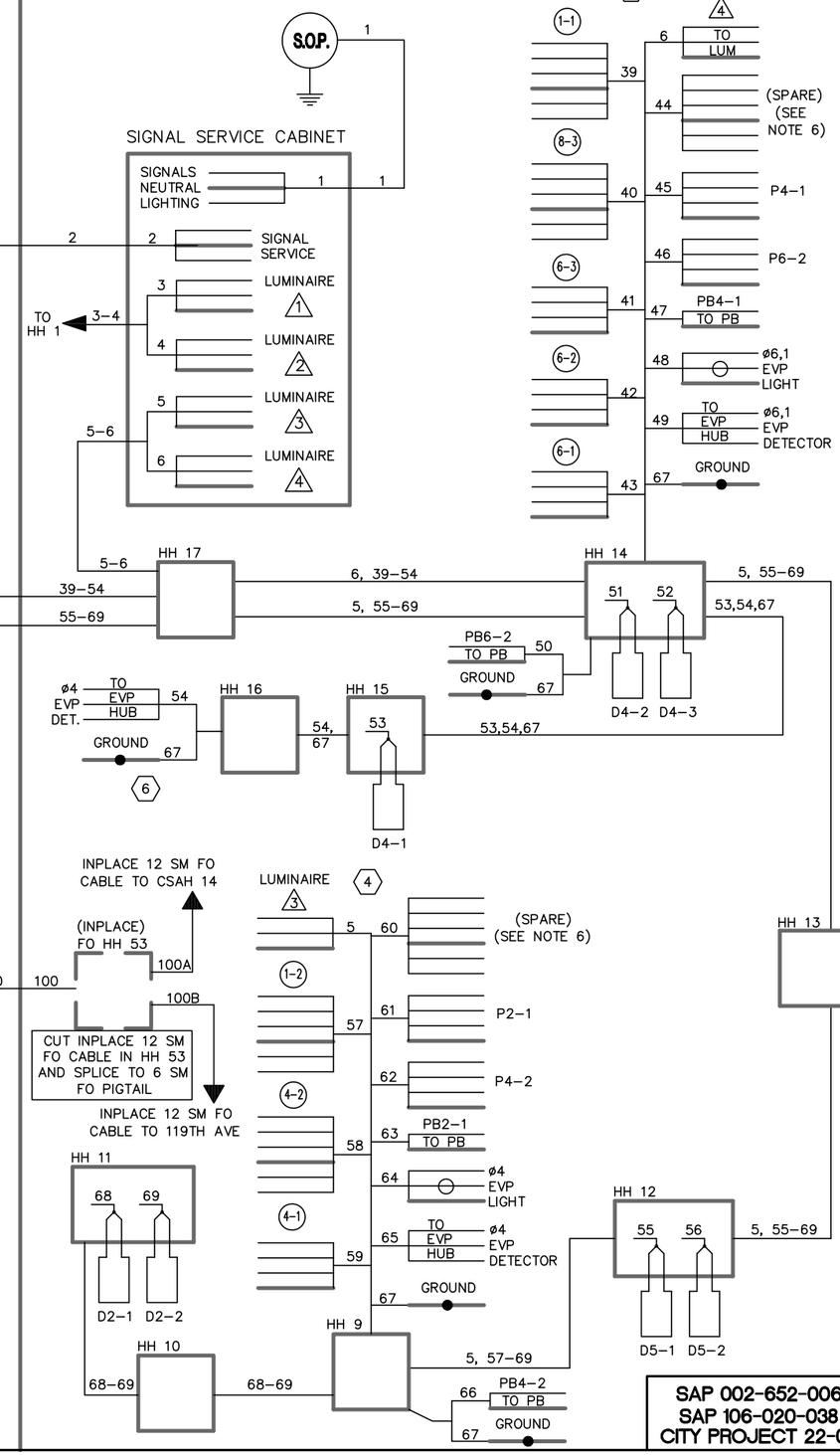
1) SEE DETAILS FOR CONDUCTOR COLOR CODE.
2) LUMINAIRES SHALL BE UNMETERED.
3) SIGNAL SYSTEM INCLUDES BATTERY BACK-UP SERVICE CABINET (WITH BATTERIES AND BACK UP SYSTEM EQUIPMENT).
4) SPLICES ARE ONLY ALLOWED ON LOOP DETECTOR CIRCUITS (IN HANDHOLES).
5) ALL CABLES AND CONDUCTORS ARE NEW AND SHALL BE F & I BY CONTRACTOR.
6) FOR EACH "SPARE" CABLE, COIL SUFFICIENT CABLE TO REACH THE END OF THE MAST ARM IN THE HANDHOLE ADJACENT TO EACH POLE.
7) LEAVE ONE LOOP OF SLACK FOR EACH CABLE IN EACH POLE BASE.



CONTROLLER AND CABINET

2	SIGNAL SERVICE	27	DWK P2-2 WLK P2-2 SPR NEU P2-2	53	D4-1		
7	RLA 5-2 YLA 5-2 GLA 5-2 NEU 5-2 FYLA 5-2 SPR	28	DWK P8-1 WLK P8-1 SPR NEU P8-1	54	ø4 EVP DETECTOR		
8	RED 8-2 YEL 8-2 GRN 8-2 NEU 8-2 SPR SPR	29	PB8-1 NEU	55	D5-1		
9	RED 8-1 YEL 8-1 GRN 8-1 NEU 8-1	30	ø2,5 EVP LT EQG NEU	56	D5-2		
10	SPR SPR SPR NEU SPR SPR	31	ø2,5 EVP DETECTOR	57	RLA 1-2 YLA 1-2 GLA 1-2 NEU 1-2 FYLA 1-2 SPR		
11	DWK P6-1 WLK P6-1 SPR NEU P6-1	32	ø6,1 EVP DETECTOR	58	RED 4-2 YEL 4-2 GRN 4-2 NEU 4-2 SPR SPR		
12	PB6-1 NEU	33	PB2-2 NEU	59	RED 4-1 YEL 4-1 GRN 4-1 NEU 4-1		
13	ø8 EVP LT EQG NEU	34	GROUND	60	SPR SPR SPR NEU SPR SPR		
14	ø8 EVP DETECTOR	35	D8-3	61	DWK P2-1 WLK P2-1 SPR NEU P2-1		
15	DWK P8-2 WLK P8-2 SPR NEU P8-2	36	D8-4	62	DWK P4-2 WLK P4-2 SPR NEU P4-2		
16	PB8-2 NEU	37	D8-1	63	PB2-1 NEU		
17	D6-1	38	D8-2	64	ø4 EVP LT EQG NEU		
18	D6-2	39	RLA 1-1 YLA 1-1 GLA 1-1 NEU 1-1 FYLA 1-1 SPR	65	ø4 EVP DETECTOR		
19	D1-1	40	RED 8-3 YEL 8-3 GRN 8-3 NEU 8-3 SPR SPR	66	PB4-2 NEU		
20	D1-2	41	RED 6-3 YEL 6-3 GRN 6-3 NEU 6-3	67	GROUND		
21	RLA 5-1 YLA 5-1 GLA 5-1 NEU 5-1 FYLA 5-1 SPR	42	RED 6-2 YEL 6-2 GRN 6-2 NEU 6-2	68	D2-1		
22	RED 4-3 YEL 4-3 GRN 4-3 NEU 4-3 SPR SPR	43	RED 6-1 YEL 6-1 GRN 6-1 NEU 6-1	69	D2-2		
23	RED 2-3 YEL 2-3 GRN 2-3 NEU 2-3	44	SPR SPR SPR NEU SPR SPR				
24	RED 2-2 YEL 2-2 GRN 2-2 NEU 2-2	45	DWK P4-1 WLK P4-1 SPR NEU P4-1				
25	RED 2-1 YEL 2-1 GRN 2-1 NEU 2-1	46	DWK P6-2 WLK P6-2 SPR NEU P6-2				
26	SPR SPR SPR NEU SPR SPR	47	PB4-1 NEU				
		48	ø6,1 EVP LT EQG NEU				
		49	ø6,1 EVP DETECTOR				
		50	PB6-2 NEU				
		51	D4-2				
		52	D4-3				

6 SM FO PIGTAIL CABLE — 100 — 100



SAP 002-652-006
SAP 106-020-038
CITY PROJECT 22-08

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SEH Project	ANOKC 163661
Drawn By	JMG
Designed By	JMG
Checked By	JMG

Rev.#	Revision Issue Description	Date

Rev.#	Revision Issue Description	Date

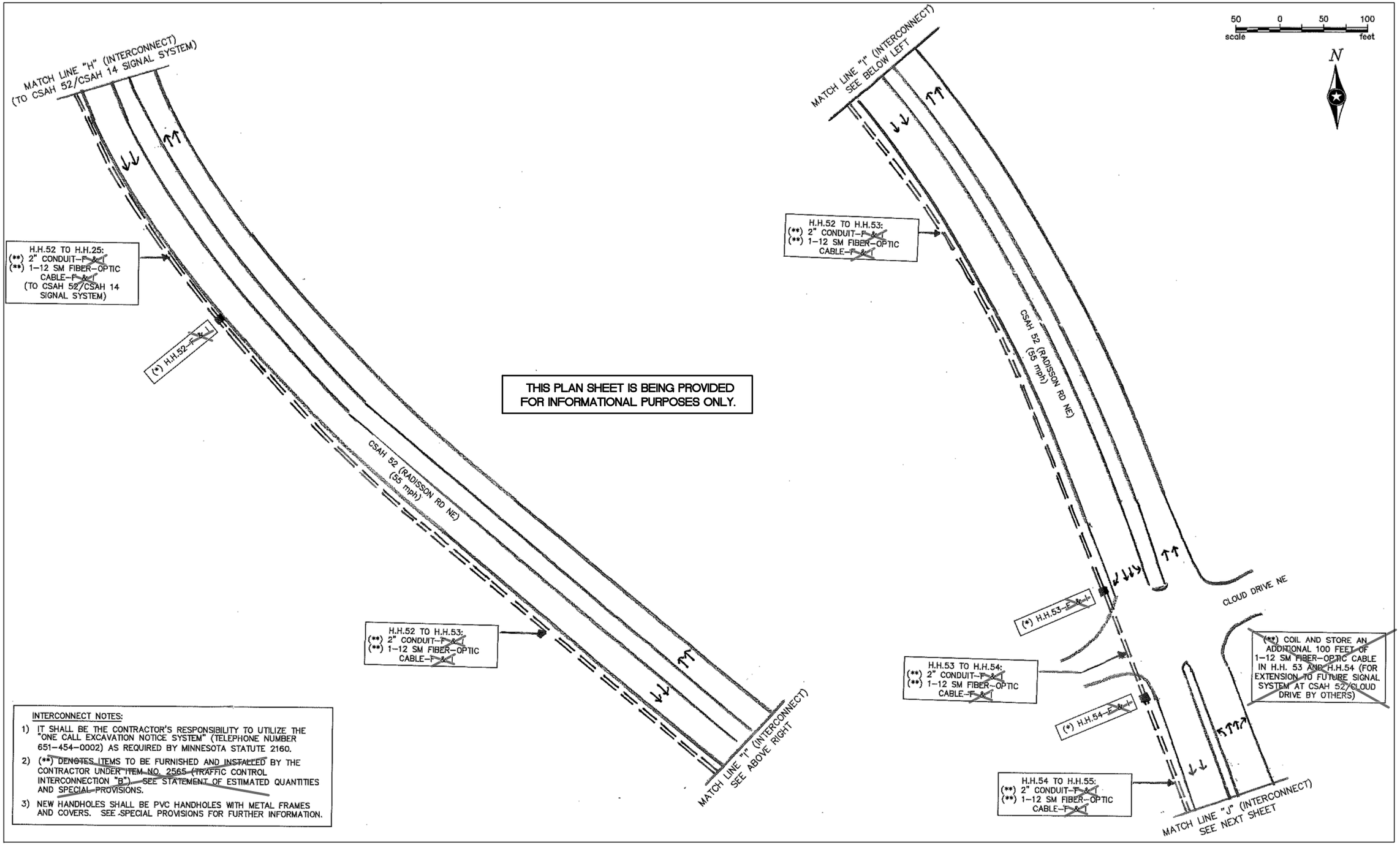
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Date: November 17, 2022 — Name: John M. Gray, PE — Lic. No. 22457

CSAH 52 AT CLOUD DRIVE NE

ANOKA COUNTY, MINNESOTA
CITY OF BLAINE

TRAFFIC CONTROL SIGNAL SYSTEM
FIELD WIRING DIAGRAM
CSAH 52 (RADISSON RD NE) AT CLOUD DR NE



THIS PLAN SHEET IS BEING PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

INTERCONNECT NOTES:

1) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 651-454-0002) AS REQUIRED BY MINNESOTA STATUTE 2160.
2) (**) DENOTES ITEMS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER ITEM NO. 2565 (TRAFFIC CONTROL INTERCONNECTION "B") SEE STATEMENT OF ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
3) NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS. SEE SPECIAL PROVISIONS FOR FURTHER INFORMATION.

SAP 002-652-006
SAP 106-020-038
CITY PROJECT 22-08

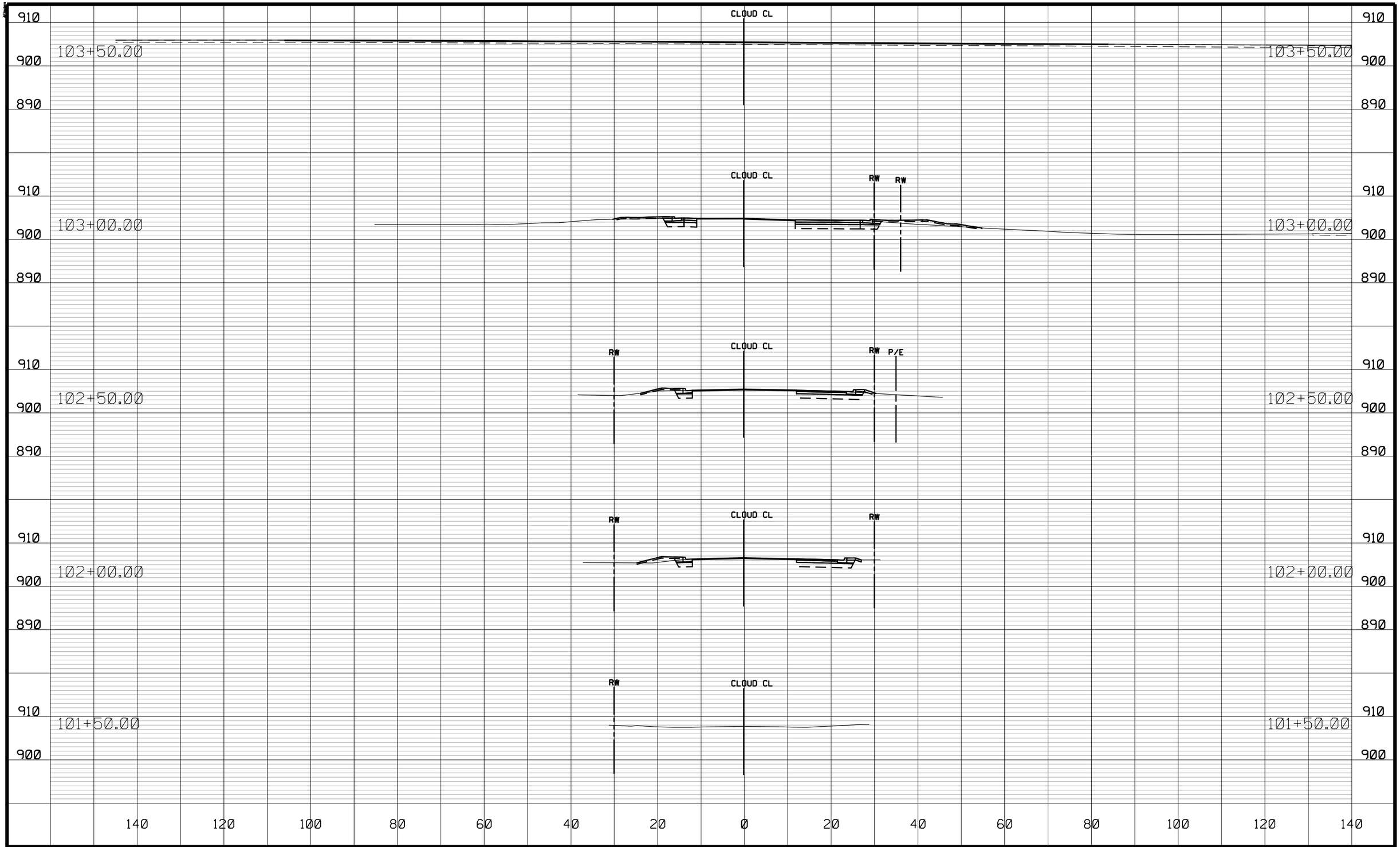
SEH Project	ANOKC 163661	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
Drawn By	JMG						
Designed By	JMG						
Checked By	JMG						

SEH

CSAH 52 AT CLOUD DRIVE NE

ANOKA COUNTY, MINNESOTA
CITY OF BLAINE

INPLACE INTERCONNECT SYSTEM
"FOR INFORMATION ONLY"
CSAH 52 (RADISSON RD NE) AT CLOUD DR NE



NO	DATE	BY	CKD	APPR	REVISION

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DRAWN BY APA DATE 12/09/22

DESIGN BY JRB DATE 12/09/22

CHECKED BY NJD DATE 12/09/22

ANOKA COUNTY

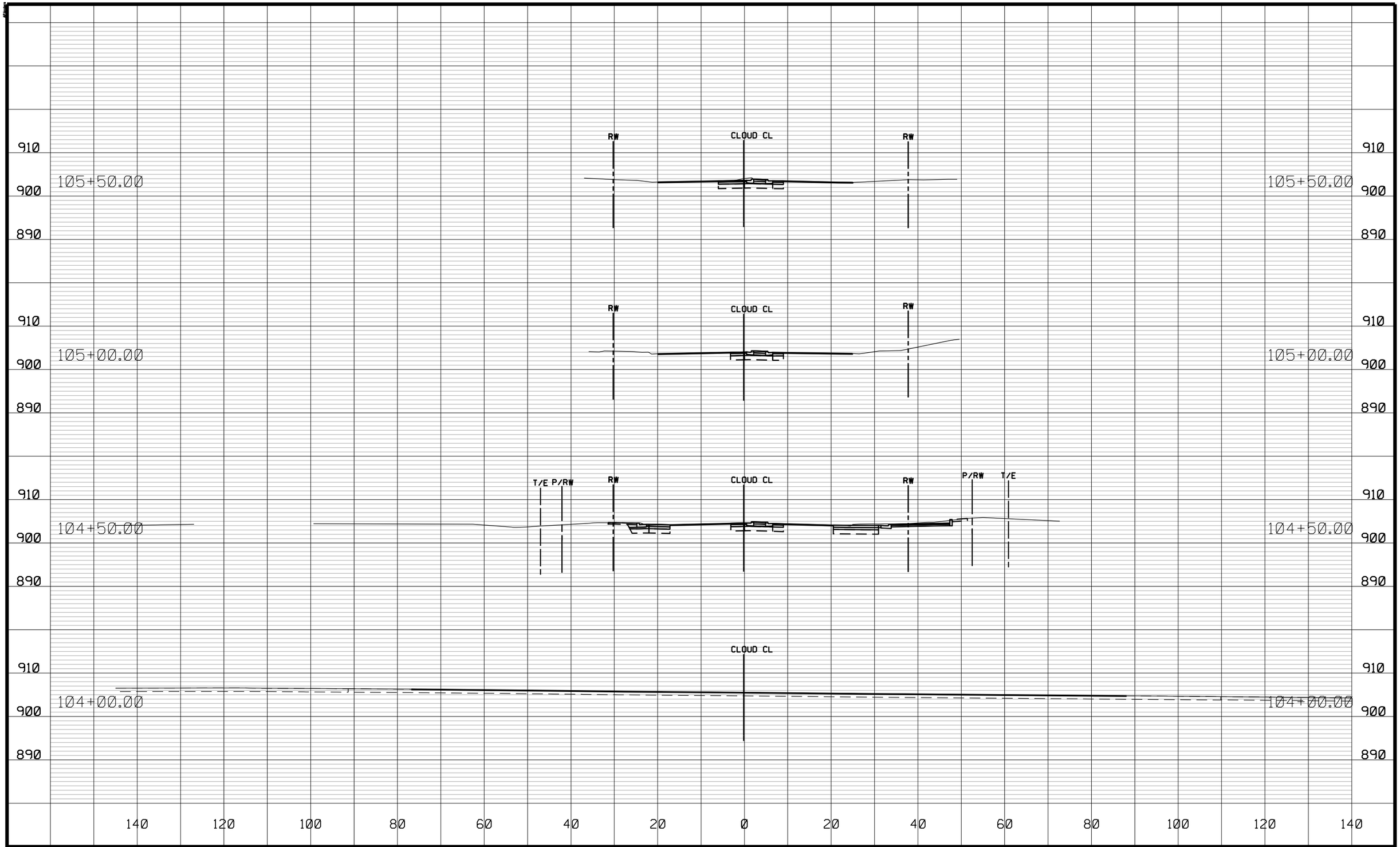
ANOKA COUNTY HIGHWAY DEPT.

SAP 002-652-006
SAP 106-020-038

CROSS SECTIONS

STA 101+50.00 TO 103+50.00

Sheet 61 of 62 Sheets



NO	DATE	BY	CKD	APPR	REVISION

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DRAWN BY APA DATE 12/09/22
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ANOKA COUNTY
HIGHWAY DEPT.

SAP 002-652-006
SAP 106-020-038

CROSS SECTIONS
STA 104+00.00 TO 105+50.00

Sheet 62 of 62 Sheets