MINNESOTA DEPARTMENT OF TRANSPORTATION
ANOKA COUNTY

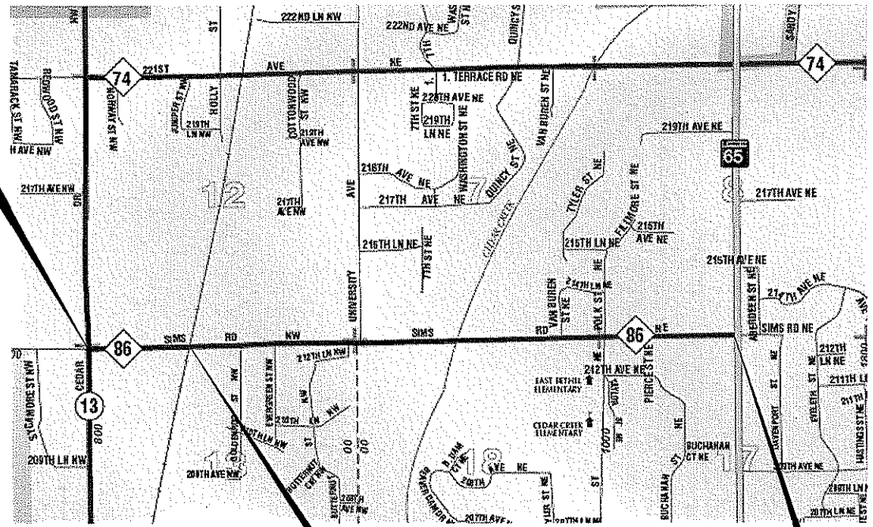
CONSTRUCTION PLAN FOR BITUMINOUS RECLAMATION, BITUMINOUS SURFACING, 8' PAVED SHOULDER CONSTRUCTION.

LOCATED ON CR 86 BETWEEN CSAH 13 AND HWY 65

COUNTY PROJECT 10-21-86

GROSS LENGTH	12620 FEET	2.39 MILES
BRIDGES-LENGTH	0.00 FEET	0.000 MILES
EXCEPTIONS-LENGTH	40 FEET	0.005 MILES
NET LENGTH	12580 FEET	2.38 MILES

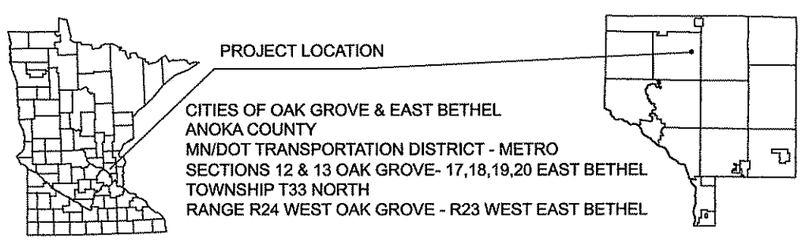
CITIES OF OAK GROVE & EAST BETHEL



BEGIN COUNTY PROJECT 10-21-86
STA. 10+00

R X R EXCEPTION
STA 30+60 TO STA 31+00

END COUNTY PROJECT 10-21-86
STA. 136+20



PROJECT LOCATION

CITIES OF OAK GROVE & EAST BETHEL
ANOKA COUNTY
MN/DOT TRANSPORTATION DISTRICT - METRO
SECTIONS 12 & 13 OAK GROVE- 17,18,19,20 EAST BETHEL
TOWNSHIP T33 NORTH
RANGE R24 WEST OAK GROVE - R23 WEST EAST BETHEL

GOVERNING SPECIFICATIONS

THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM AND BE INSTALLED IN ACCORDANCE TO THE "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MNMUTCD), AND PAR VI, "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS."

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	STATEMENT OF ESTIMATED QUANTITIES
3	EXISTING AND PROPOSED TYPICAL SECTIONS
4-6	DETAILS
7-11	PLAN
12-16	STRIPING PLAN
16A-16F	MISC. SIGNAL PLANS

Approved 3/26/2010
ANOKA COUNTY ENGINEER

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) 1-8-F
F-FRAME C-CONCRETE
S-STONE T-TILE
B-BRICK ST-STUCCO
RAILROAD CROSSING BELL
RAILROAD CROSSING GATE
MANHOLE
CATCH BASIN
FIRE HYDRANT
CAST IRON MONUMENT
IRON PIN
GRAVEL PIT
SAND PIT
BORROW PIT
ROCK QUARRY

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
ELECTRIC MANHOLE
BURIED TELEPHONE CABLE T-BUR
BURIED ELECTRIC CABLE P-BUR
T-AE
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'

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\10-01-00\CR_86_(CEDAR-TH65)\PLAN\1 TITLE.DGN 3/1/2010 2:36:19 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: CHARLES CADENHEAD
SIGNATURE:
DATE: 3/26/10 LICENSE NO. # 40416

DRAWN BY JF DATE 3/1/2010
DESIGN BY JF DATE 3/1/2010
CHECKED BY JO DATE 3/1/2010

ANOKA COUNTY HIGHWAY DEPT.

COUNTY PROJECT NO. 10-21-86

TITLE SHEET

Sheet 1 of 16F Sheets

CR 86	STATEMENT OF ESTIMATED QUANTITIES			
ITEM NO.	ITEM	NOTE NO.	UNIT	TOTAL EST. QUANT.
2021.501	MOBILIZATION		LUMP SUM	1
2104.505	REMOVE CONCRETE DRIVEWAY PAVEMENT	1	SQ YD	43
2104.511	SAW CONCRETE PAVEMENT FULL DEPTH	1	LIN FT	28
2123.503	MOTOR GRADER	2	HOUR	36
2123.503	PNEUMATIC-TIRED ROLLER	2	HOUR	24
2130.501	WATER		M-GAL	167
2211.501	AGGREGATE BASE CLASS 5	3	TON	2689
2232.501	MILL BITUMINOUS SURFACE (2") (JOINTS)	1	SQ YD	799
2301.501	CONCRETE PAVEMENT (6" DRIVEWAYS)		SQ YD	23
2331.604	BITUMINOUS PAVEMENT RECLAMATION		SQ YD	40694
2357.502	BITUMINOUS MATERIAL FOR TACK COAT		GALLON	2050
2360.501	TYPE SP 12.5 SPWEB440B MAINLINE WEAR (2")		TON	6874
2360.501	TYPE SP 12.5 SPWEB440B STREET APPROACH WEAR (VAR.)		TON	337
2360.502	TYPE SP 12.5 SPNWB440B MAINLINE BASE (2")		TON	4680
2540.602	INSTALL MAIL BOX SUPPORT	12	EACH	22
2554.523	END TREATMENT, ET 2000 (FOR GUARDRAIL)	11	EACH	4
2554.602	INSTALL ET 2000 END TREATMENT	11	EACH	4
2554.603	PLATE BEAM RAIL (FOR GUARDRAIL)	11	LIN FT	650
2554.603	INSTALL GUARDRAIL	11	LIN FT	650
2563.601	TRAFFIC CONTROL	4,5,6,9,13	LUMP SUM	1
2565.602	LOOP DETECTOR	5,6	EACH	4
2581.501	REMOVABLE PREFORM PLASTIC MARKINGS	7,8	LIN FT	2019
2582.502	4" SOLID LINE WHITE - EPOXY	10	LIN FT	25687
2582.502	4" SOLID LINE YELLOW - EPOXY	10	LIN FT	8763
2582.502	4" BROKEN LINE YELLOW-EPOXY	10	LIN FT	2280
2582.502	4" DOUBLE SOLID LINE YELLOW - EPOXY	10	LIN FT	1154
2582.602	PAVEMENT MESSAGE R X R - PREFORM THERMOPLASTIC	10	EACH	2
2582.603	24" SOLID LINE WHITE - PREFORM THERMOPLASTIC	10	LIN FT	48
2582.618	3 X 6 ZEBRA CROSS WALK - PREFORM THERMOPLASTIC	10	SQ FT	180

NOTES

1 LOCATION TO BE DETERMINED BY ENGINEER.

2 INCLUDES TIME TO REMOVE EXCESS RECLAIMED MATERIAL TO MEET RXR TRACKS.

3 SHLDR. LEVELING / NEW 1.5' SHLDRS / AGG. ST APPROACHES & AGG.DRIVEWAYS.

4 CONTRACTOR IS RESPONSIBLE TO CORDINATE WITH RXR FOR WORK DONE INSIDE THEIR RIGHT OF WAY.

5 CONTRACTOR IS RESPONSIBLE TO CORDINATE WITH MNDOT FOR WORK DONE INSIDE THEIR RIGHT OF WAY AT HWY 65.

6 CONTRACTOR TO HAVE PLAN INPLACE APPROVED BY MNDOT FOR REPLCEMENT IF DAMAGED DURING RECLAIM , ALSO TO COORDINATE WITH MNDOT TO HAVE MNDOT PRESENT WHILE RECLAIMING LOOP AFFECTED AREAS.

7 CL YLW SKIPS TO BE APPLIED AS SOON AS POSSIBLE ON EACH LIFT (MUST BE APPLIED BEFOR CONTRACTOR LEAVES FOR THE DAY).

8 24" X 12' TEMPORARY WHITE STOPBARS MUST BE INSTALLELD EB & WB IMMEDIATELY FOLLOWING ROLLING ON EACH LIFT BACK FROM STOP ARMS OF R X R TRACKS. (MAY USE 4" WIDE TEMP LANE TAPE TO CONSTRUCT).

9 DO NOT PASS, PASS WITH CARE, NO CENTER STRIPE AND BUMP/BUMP AHEAD SIGNS - TO BE INPLACE DURING RECLAIM / PAVING OPERATIONS.

10 PERMANENT MARKINGS TO BE IN PLACE WITHIN 72 HOURS OF FINAL MAINLINE PAVING.

11 SEE GUARDRAIL DETAIL FOR INSTALLATION.

12 MAILBOXES TO BE INSTALLED AT THE EXISTING MAILBOX LOCATION.

13 ALL TRAFFIC CONTROL METHODS SHALL CONFORM TO THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

BASIS OF PLANNED QUANTITIES

2211.501	AGGREGATE BASE CLASS 5	CU YDS * 1.8 = TONS
2357.502	BITUMINOUS MATERIAL FOR TACK COAT	.05 GAL / SQ YD
2360.501	TYPE SP 12.5 SPWEB440B WEAR	115 LBS/SQYD/IN THICKNESS
2360.502	TYPE SP 12.5 SPNWB440B BASE	115 LBS/SQYD/IN THICKNESS
2580.603	REMOVABLE PREFORM PLASTIC MARKINGS	4' AT 50' INTERVALS FOR SKIPS & CONST. STOP BARS AT RXR

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\10-01-00\CR_86_(Cedar-TH65)\Plan\2 Seq.dgn 3/11/2010 2:11:06 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: CHARLES CADENHEAD

SIGNATURE:

DATE: 3/16/10 LICENSE NO. # 40416

DRAWN BY JF DATE 3/1/2010

DESIGN BY JF DATE 3/1/2010

CHECKED BY JO DATE 3/1/2010

ANOKA COUNTY

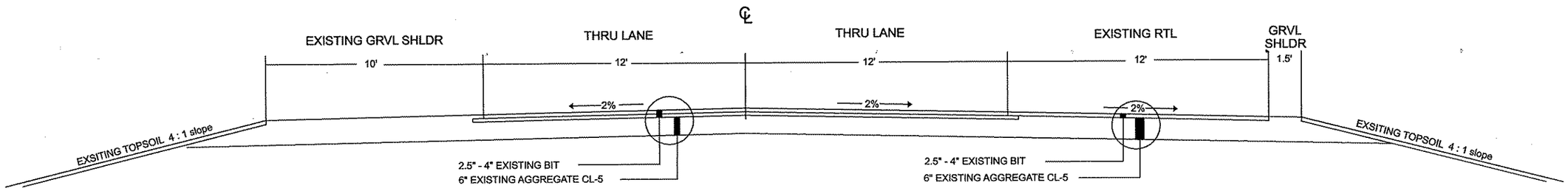
ANOKA COUNTY HIGHWAY DEPT.

COUNTY PROJECT NO. 10-21-86

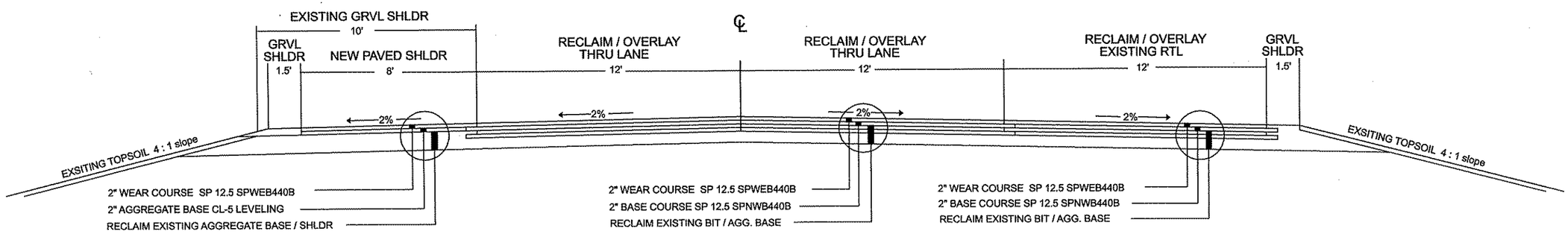
STATEMENT OF ESTIMATED QUANTITIES

Sheet 2 of 16 Sheets

EXISTING TYPICAL
10+00 - 136+20



PROPOSED TYPICAL
10+00 - 136+20



NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\10-01-00\CR_86_(Cedar-TH65)\Plan\3 typicals.dgn 3/3/2010 7:10:19 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.

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ANOKA COUNTY

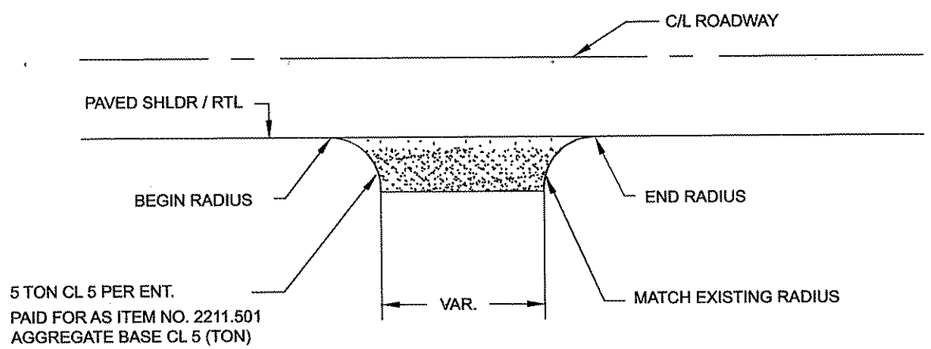
ANOKA COUNTY HIGHWAY DEPT.

COUNTY PROJECT NO. 10-21-86

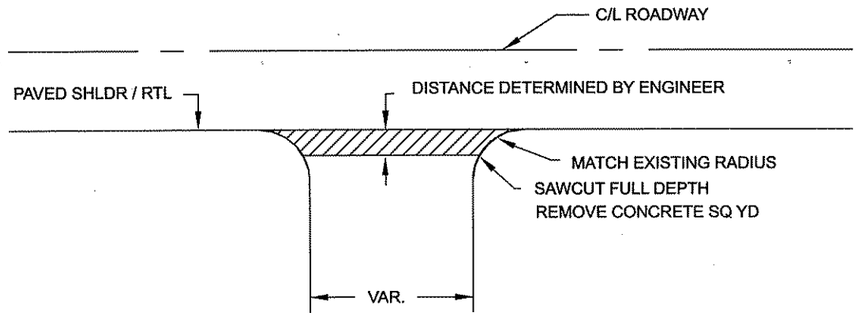
EXISTING AND PROPOSED TYPICAL SECTIONS

Sheet 3 of 16 Sheets

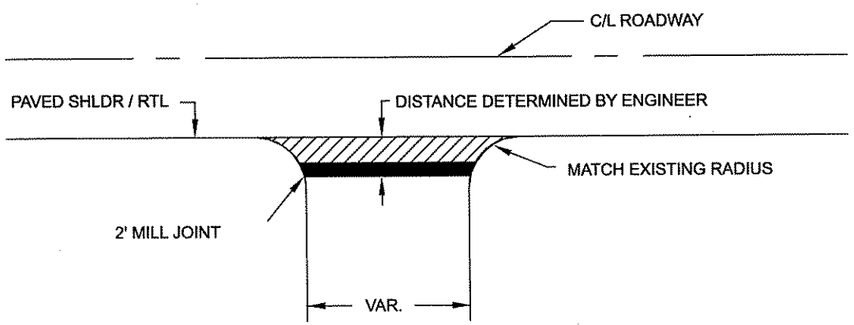
GRAVEL DR. WAYS AND FEILD ENT.



CONCRETE DR. WAYS

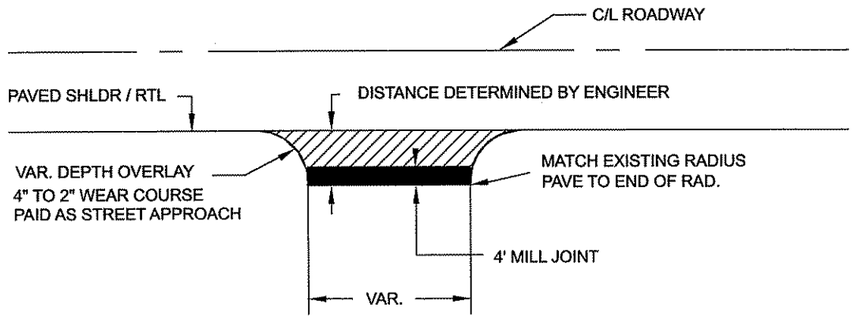


PAVED DR. WAYS



DRIVEWAYS TO BE PAVED IN SEPARATE OPERATION THAN MAINLINE WEAR.
PAID AS STREET APPROACH WEAR

PAVED STREET APPROACHES



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: CHARLES CADENHEAD

SIGNATURE: [signature]

DATE: 3/26/10 LICENSE NO. # 40416

DRAWN BY JF DATE 3/1/2010

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CHECKED BY JO DATE 3/1/2010

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

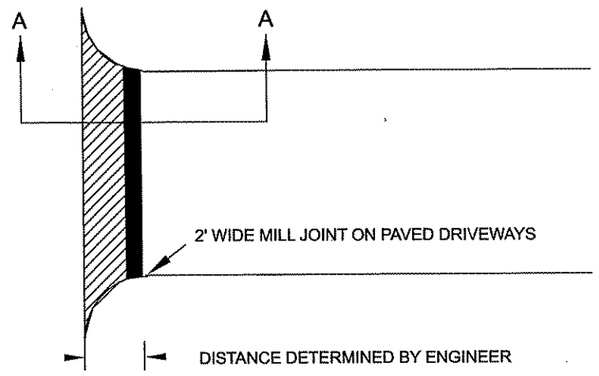
COUNTY PROJECT NO. 10-21-86

DETAILS

Sheet 4 of 16F Sheets

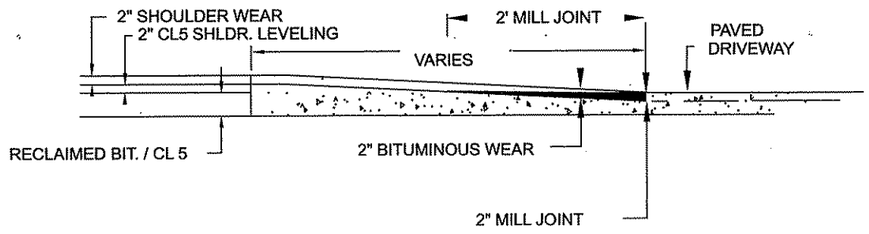
PAVED DRIVEWAYS

JOINT DETAILS



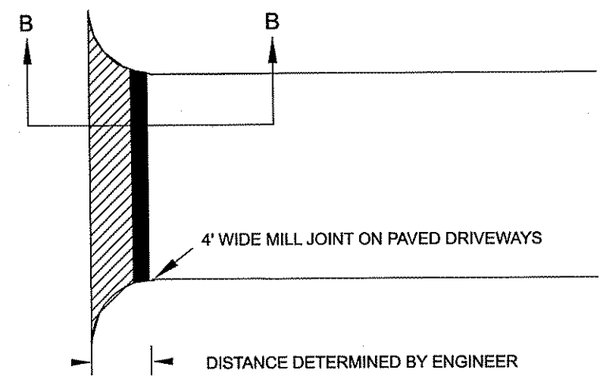
DRIVEWAYS TO BE PAVED IN SEPERATE OPERATION THAN MAINLINE WEAR.
PAID AS STREET APPROACH WEAR

DRIVEWAY JOINT DETAILS A - A



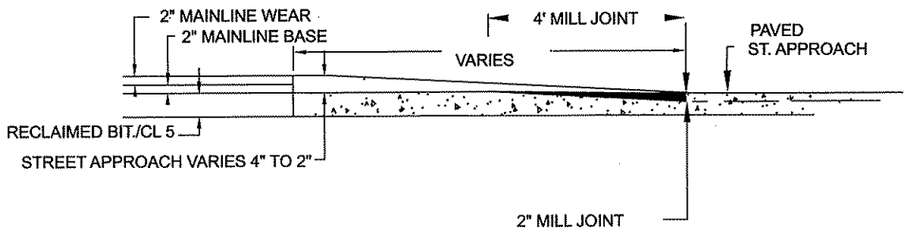
PAVED STREETS

JOINT DETAILS



OVERLAY EXISTING STEET APPROACH, DO NOT RECLAIM
STREETS TO BE PAVED IN SEPERATE OPERATION THAN MAINLINE WEAR.
PAID AS STREET APPROACH BASE AND WEAR

STREET APPROACH JOINT DETAILS B - B



NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\10-01-00\CR_86_(Cedar-TH65)\Plan\4 Details.dgn 3/3/2010 7:14:02 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: CHARLES CADENHEAD
SIGNATURE:
DATE: 3/26/10 LICENSE NO. # 46416

DRAWN BY JF DATE 3/1/2010
DESIGN BY JF DATE 3/1/2010
CHECKED BY JO DATE 3/1/2010

ANOKA COUNTY

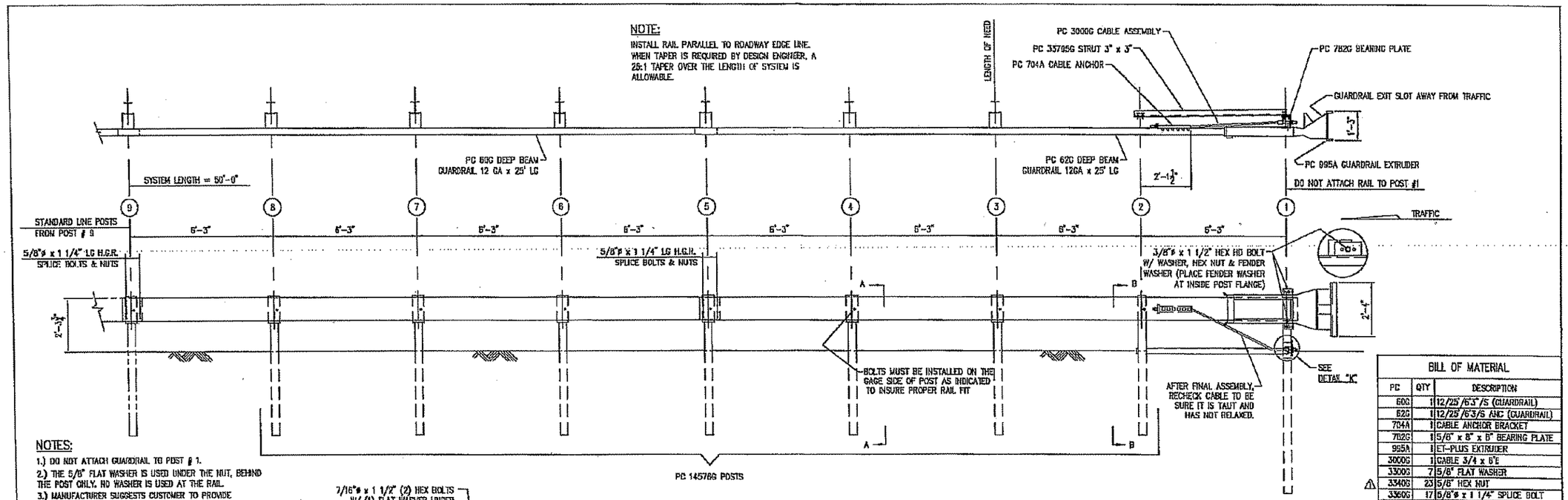
ANOKA COUNTY HIGHWAY DEPT.

COUNTY PROJECT NO. 10-21-86

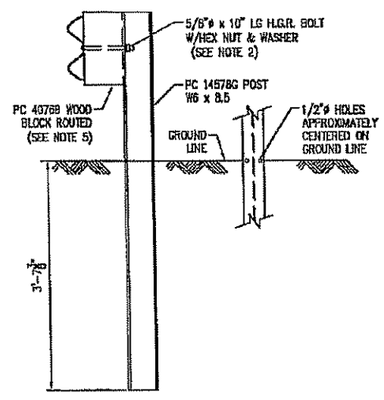
DETAILS

Sheet 5 of 16F Sheets

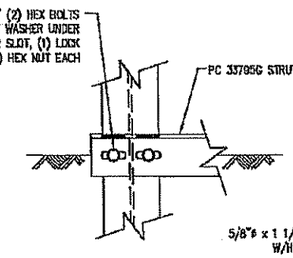
NOTE:
INSTALL RAIL PARALLEL TO ROADWAY EDGE LINE. WHEN TAPER IS REQUIRED BY DESIGN ENGINEER, A 25:1 TAPER OVER THE LENGTH OF SYSTEM IS ALLOWABLE.



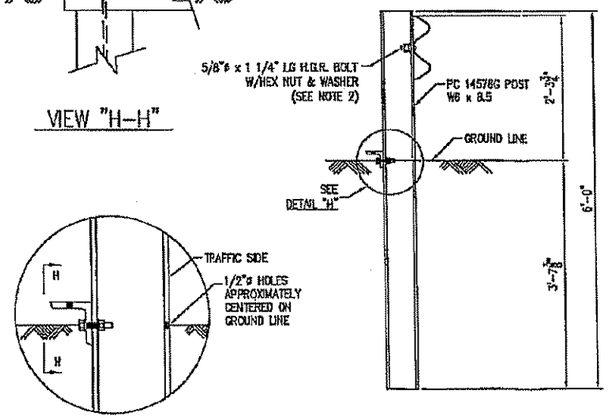
NOTES:
1.) DO NOT ATTACH GUARDRAIL TO POST # 1.
2.) THE 5/8" FLAT WASHER IS USED UNDER THE NUT, BEHIND THE POST ONLY. NO WASHER IS USED AT THE RAIL.
3.) MANUFACTURER SUGGESTS CUSTOMER TO PROVIDE REFLECTORIZATION OF TERMINAL.
4.) 25' GUARDRAIL PANELS ARE SHOWN. 12.5' GUARDRAIL PANELS ARE ACCEPTABLE ALTERNATES. WHEN 12.5' PANELS ARE USED, DO NOT ATTACH GUARDRAIL TO POST #1.
5.) PLASTIC OFFSET BLOCKS (ROUTED) ARE ACCEPTABLE ALTERNATES.



SECTION "A–A"
(TYP @ POSTS # 3 THRU #8)

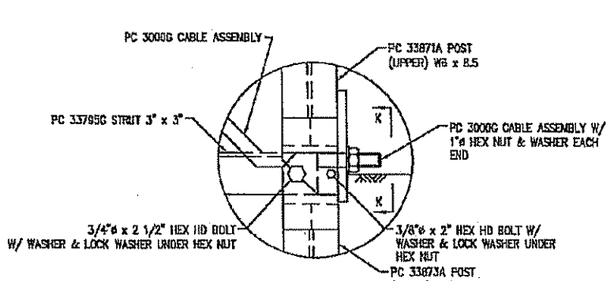


VIEW "H–H"

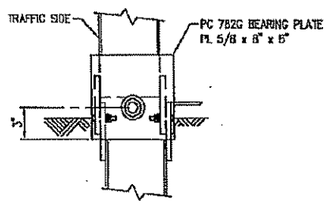


SECTION "B–B"
(POST #2)

DETAIL "H"
(POST #2)



DETAIL "K"
(POST #1)



VIEW "K–K"

BILL OF MATERIAL

PC	QTY	DESCRIPTION
60G	1	12/25'/6'3"/S (GUARDRAIL)
62G	1	12/25'/6'3/S ANC (GUARDRAIL)
704A	1	CABLE ANCHOR BRACKET
782G	1	5/8" x 8" x 5" BEARING PLATE
995A	1	ET-PLUS EXTRUDER
3000G	1	CABLE 3/4 x 6'E
3300G	7	5/8" FLAT WASHER
3340G	23	5/8" HEX NUT
3360G	17	5/8"ø x 1 1/4" SPLICE BOLT
3500G	6	5/8"ø x 10" POST BOLT
3701G	2	3/4" FLAT WASHER
3704G	2	3/4" HEX NUT
3717G	2	3/4"ø x 2 1/2" HEX HD BOLT
3900G	2	1" FLAT WASHER
3910G	2	1" HEX NUT
4076B	6	WD BLOCK 12 x 6 x 8 DR
4254G	4	3/8" FLAT WASHER
4255G	2	3/8" FENDER WASHER (1 1/2 OD)
4258G	2	3/8" LOCKWASHER
4261G	2	3/8"ø x 1 1/2" HEX HD BOLT
4388G	2	7/16" HEX NUT
4389G	2	7/16" FLAT WASHER
4390G	2	7/16"ø x 1 1/2" HEX HD BOLT
4393G	2	7/16" LOCK WASHER
4699G	2	3/4" LOCK WASHER
6321G	2	3/8"ø x 2" HEX HD BOLT
6405G	4	3/8" HEX NUT
14578G	7	POST SYT #2-#8
33795G	1	ANGLE STRUT (ET/SYTP/HBA)
33871A	1	POST ET2000 HBA #1 TOP
33873A	1	POST ET2000 HBA #1 BOTTOM

REV.	CHKD	BY	DATE	REMARKS
1		BT	5-22-03	CHANGED HARDWARE QUANITY

ET-PLUS

ET-PLUS – 50'-0"
WITH 25' PANELS, 7 SYT POSTS
& 1 HBA POST
PLAN, ELEVATION & SECTION

TRINITY INDUSTRIES, INC.
HIGHWAY SAFETY PRODUCTS
2525 STEMMONS FREEWAY, DALLAS, TX 75207

DRAWN	E.A.S.
CHECKED	BT
SCALE	N.T.S.
DATE	05/20/03
ENG. FILE #	SS373-01E
SHEET #	E1 OF 1
DRAWING NO.	SS-373
REV.	1

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\10-01-00\CR_86_(Cedar-TH65)\Plan\4 Details.dgn 3/3/2010 7:14:18 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: CHARLES CADENHEAD
SIGNATURE:
DATE: 3/26/10 LICENSE NO. # 40416

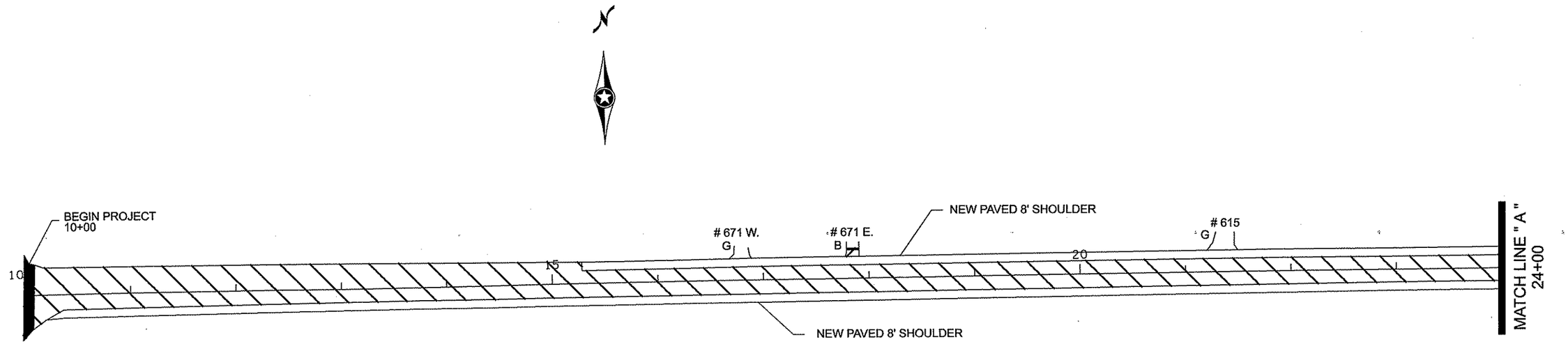
DRAWN BY JF DATE 3/1/2010
DESIGN BY JF DATE 3/1/2010
CHECKED BY JO DATE 3/1/2010

ANOKA COUNTY
HIGHWAY DEPT.

COUNTY PROJECT NO. 10-21-86

GUARDRAIL DETAILS

Sheet 6 of 16 Sheets



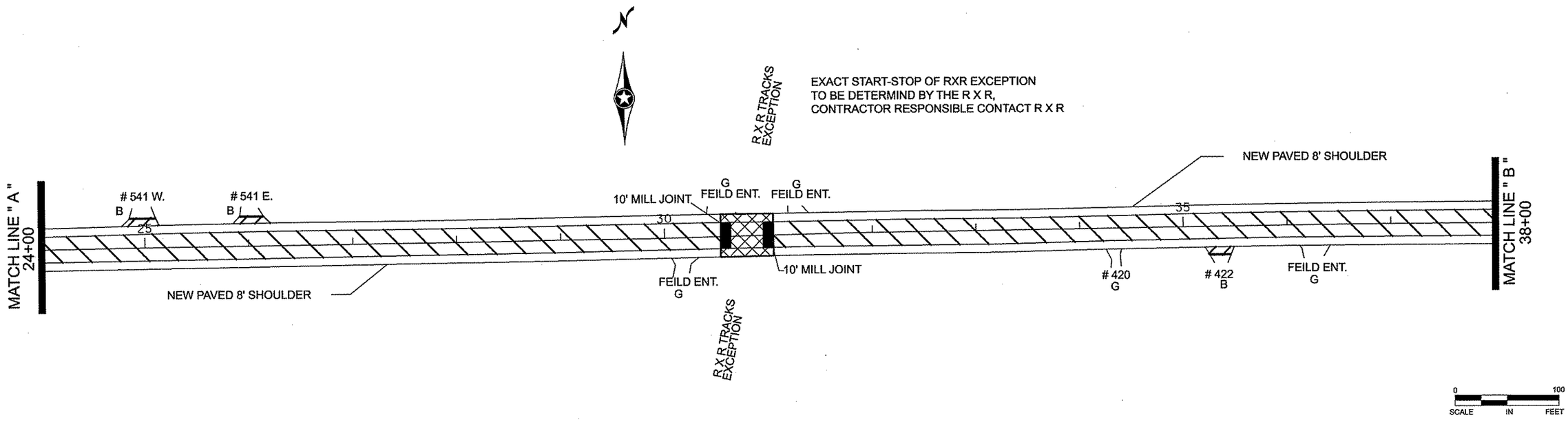
RECLAIM EXISTING MAINLINE BIT AREA

OVERLAY EXISTING STREET APPROACH
PAID AS STREET APPROACH

MILL JOINT

G = GRAVEL B = BIT C = CONCRETE

SCALE 0 100 IN FEET



SCALE 0 100 IN FEET

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\10-01-00\CR_86_(Cedar-TH65)\Plan\5 plan .dgn 3/3/2010 7:14:48 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: CHARLES CADENHEAD

SIGNATURE:

DATE: 3/26/10 LICENSE NO. # 40416

DRAWN BY JF DATE 3/1/2010

DESIGN BY JF DATE 3/1/2010

CHECKED BY JO DATE 3/1/2010

ANOKA COUNTY

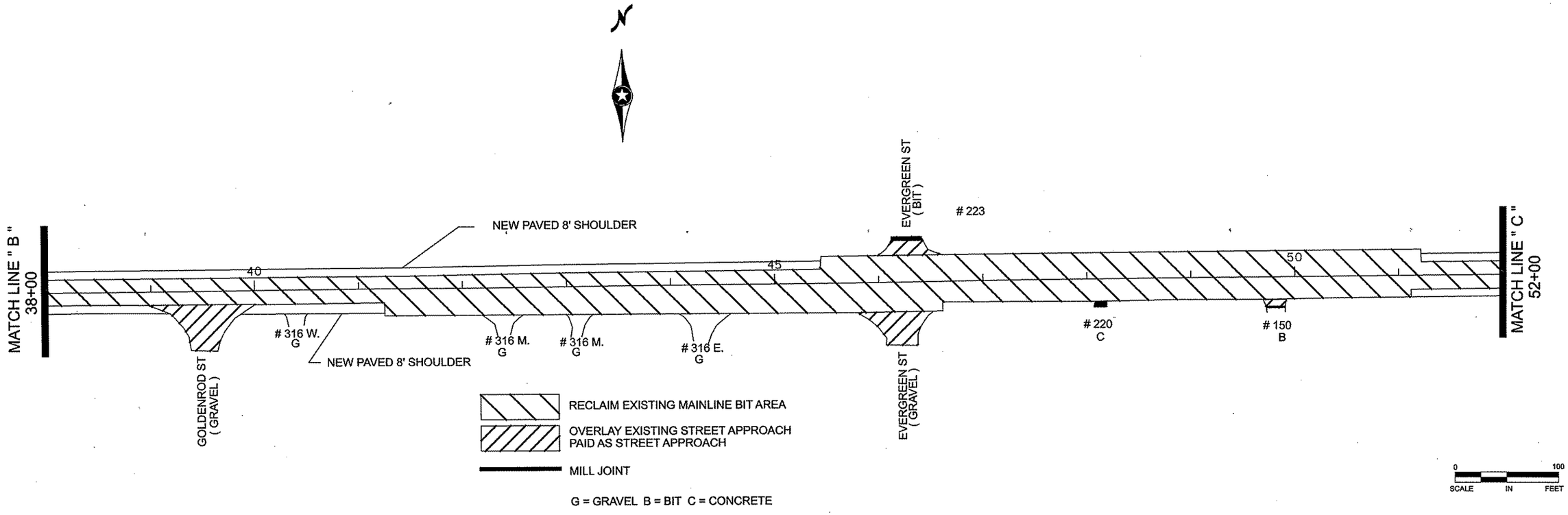
ANOKA COUNTY HIGHWAY DEPT.

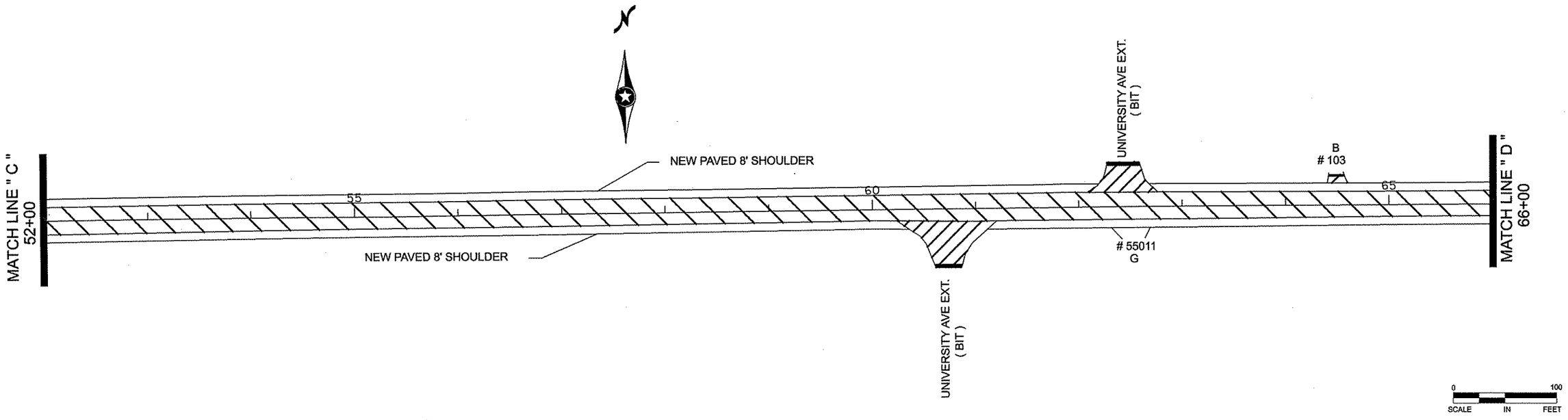
COUNTY PROJECT NO. 10-21-86

PLAN

STA 10+00 TO 38+00

Sheet 7 of 16 Sheets





NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\10-01-00\CR_86_(Cedar-TH65)\Plan\5 plan .dgn 3/3/2010 7:14:57 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: CHARLES CADENHEAD

SIGNATURE: [signature]

DATE: 3/26/10 LICENSE NO. # 40416

DRAWN BY JF DATE 3/1/2010

DESIGN BY JF DATE 3/1/2010

CHECKED BY JO DATE 3/1/2010

ANOKA COUNTY

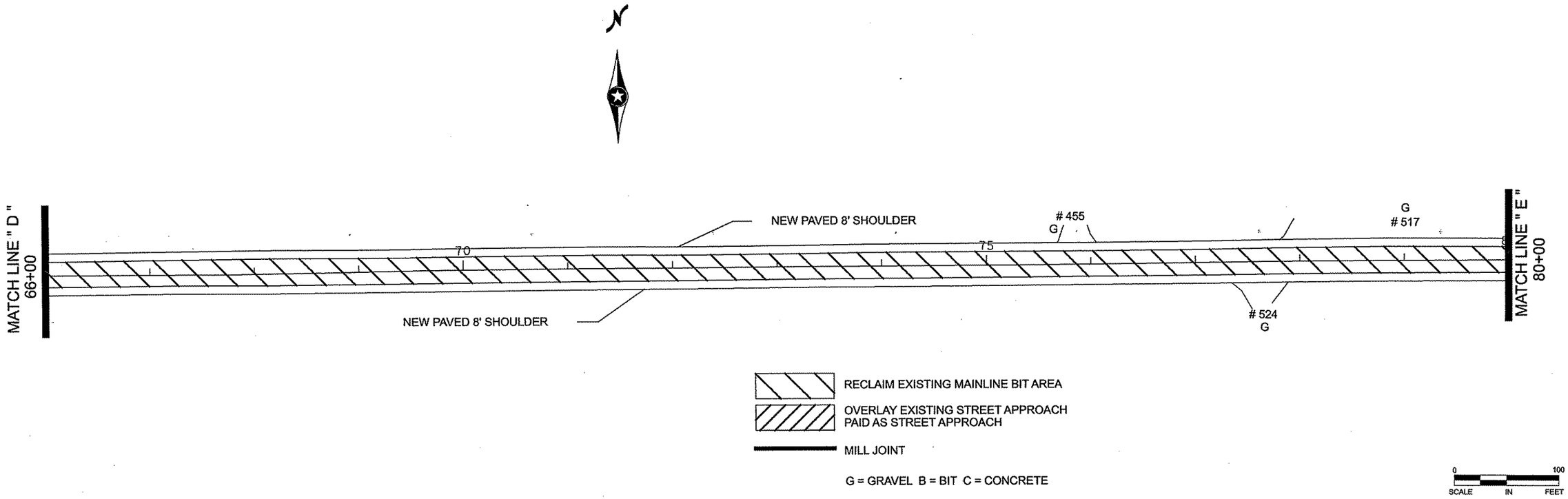
ANOKA COUNTY HIGHWAY DEPT.

COUNTY PROJECT NO. 10-21-86

PLAN

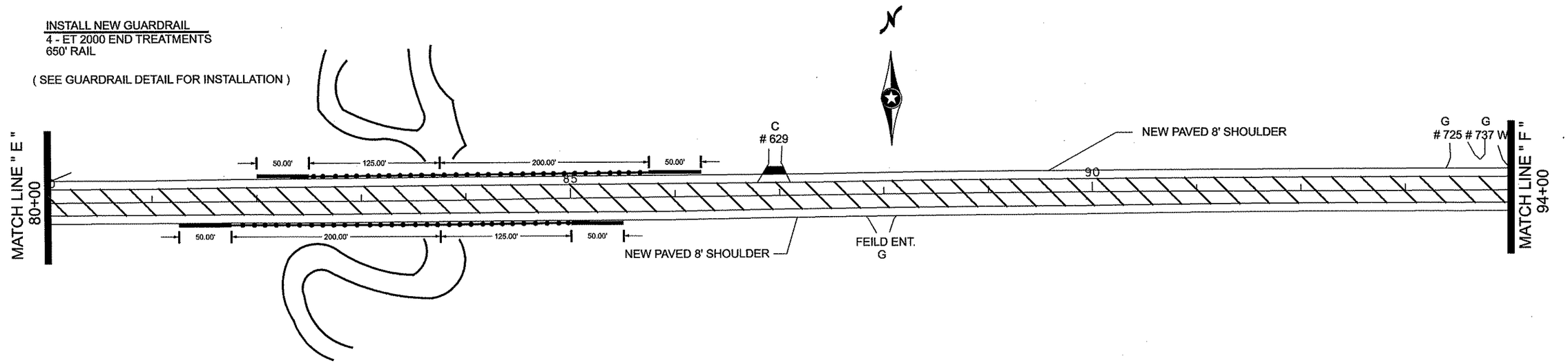
STA 38+00 TO 66+00

Sheet 8 of 16 Sheets



INSTALL NEW GUARDRAIL
4 - ET 2000 END TREATMENTS
650' RAIL

(SEE GUARDRAIL DETAIL FOR INSTALLATION)



NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\10-01-00\CR_86_(Cedar-TH65)\Plan\5 plan .dgn 3/3/2010 7:15:09 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: CHARLES CADENHEAD

SIGNATURE: Charles Cadenhead

DATE: 3/26/10 LICENSE NO. 40416

DRAWN BY JF DATE 3/1/2010

DESIGN BY JF DATE 3/1/2010

CHECKED BY JO DATE 3/1/2010

ANOKA COUNTY

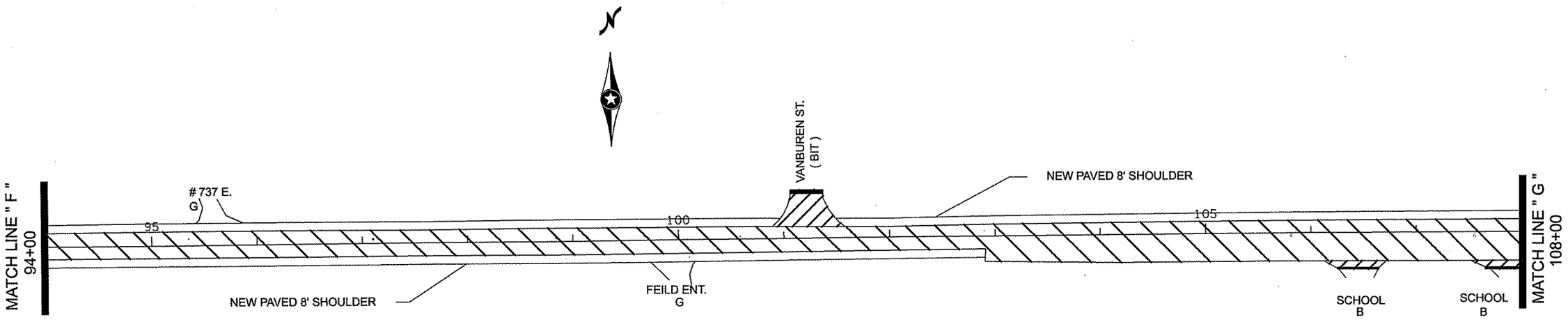
ANOKA COUNTY HIGHWAY DEPT.

COUNTY PROJECT NO. 10-21-86

PLAN

STA 66+00 TO 94+00

Sheet 9 of 16 Sheets



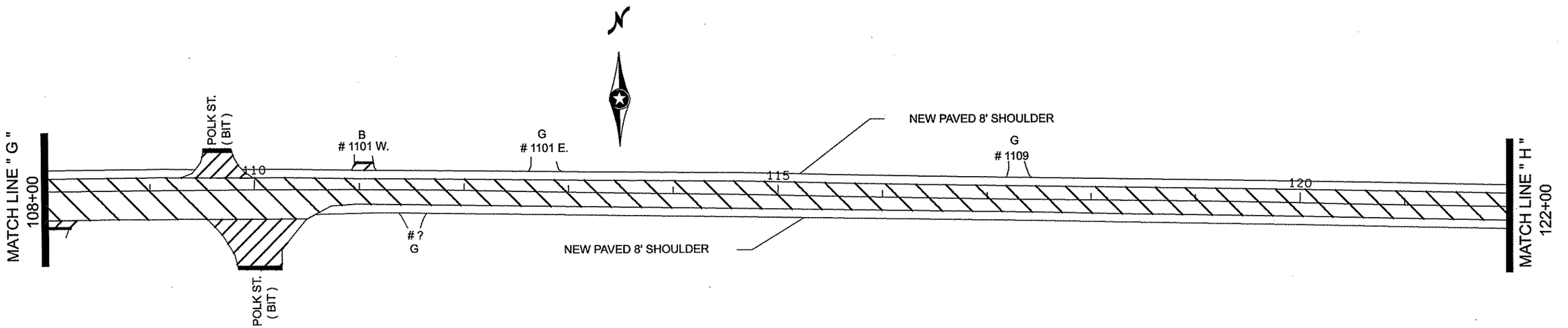
RECLAIM EXISTING MAINLINE BIT AREA

OVERLAY EXISTING STREET APPROACH
PAID AS STREET APPROACH

MILL JOINT

G = GRAVEL B = BIT C = CONCRETE

0 100
SCALE IN FEET



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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: CHARLES CADENHEAD

SIGNATURE: [signature]

DATE: 3/26/10 LICENSE NO. # 40416

DRAWN BY JF DATE 3/1/2010

DESIGN BY JF DATE 3/1/2010

CHECKED BY JO DATE 3/1/2010

ANOKA COUNTY

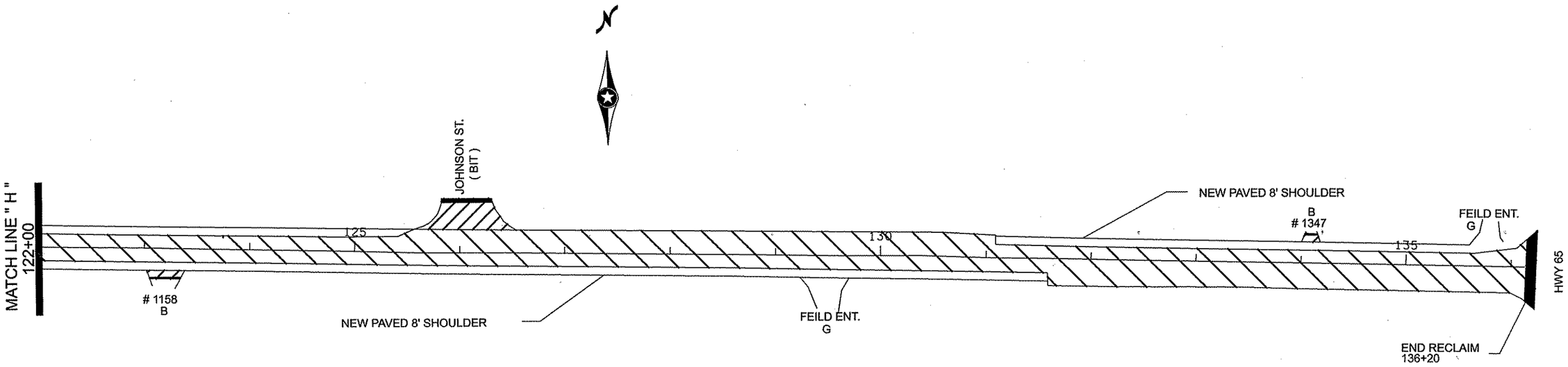
ANOKA COUNTY
HIGHWAY DEPT.

COUNTY PROJECT NO. 10-21-86

PLAN

STA 94+00 TO 122+00

Sheet 10 of 16 Sheets



NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\10-01-00\CR_86_(Cedar-TH65)\Plan\5 plan .dgn 3/3/2010 7:15:36 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: CHARLES CADENHEAD

SIGNATURE: Charles Cadenhead

DATE: 3/26/10 LICENSE NO. # 40416

DRAWN BY JF DATE 3/1/2010

DESIGN BY JF DATE 3/1/2010

CHECKED BY JO DATE 3/1/2010

ANOKA COUNTY

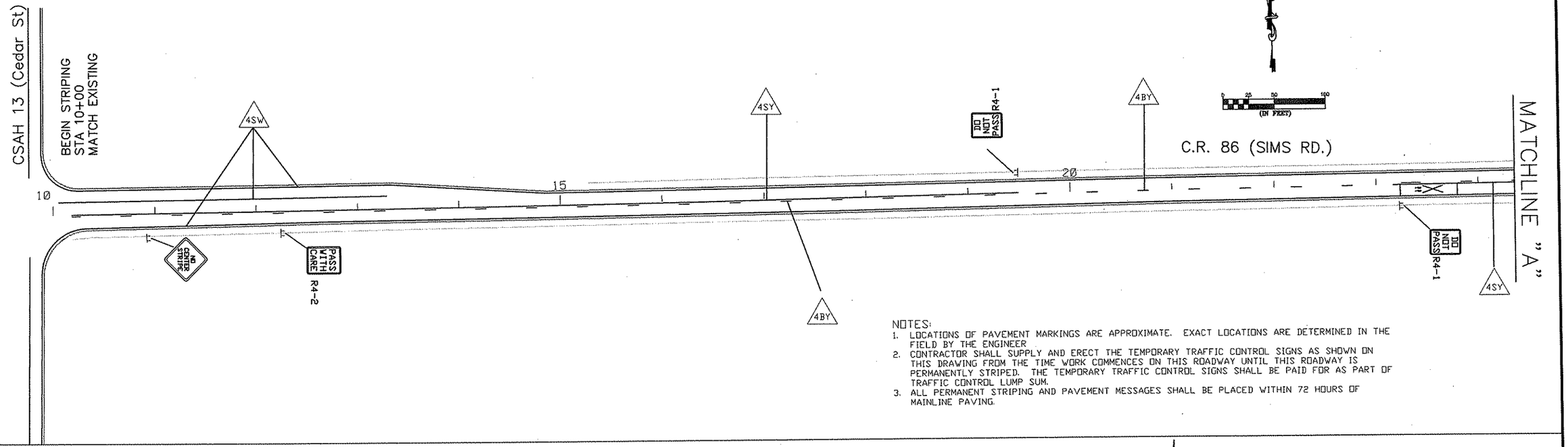
ANOKA COUNTY HIGHWAY DEPT.

COUNTY PROJECT NO. 10-21-86

PLAN

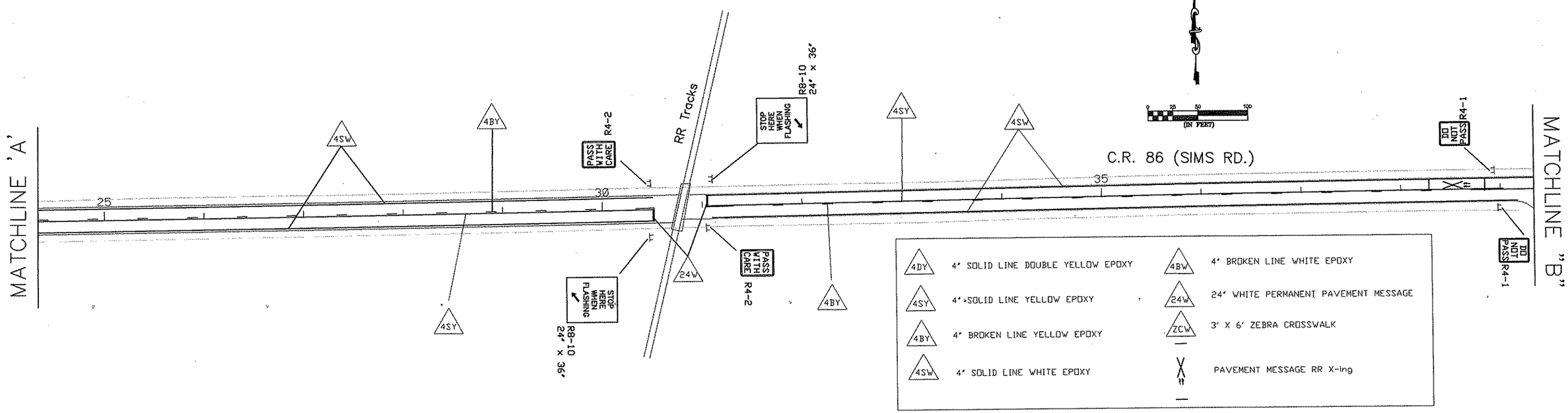
STA 122+00 TO 136+20

Sheet 11 of 16 Sheets



NOTES:

1. LOCATIONS OF PAVEMENT MARKINGS ARE APPROXIMATE. EXACT LOCATIONS ARE DETERMINED IN THE FIELD BY THE ENGINEER
2. CONTRACTOR SHALL SUPPLY AND ERECT THE TEMPORARY TRAFFIC CONTROL SIGNS AS SHOWN ON THIS DRAWING FROM THE TIME WORK COMMENCES ON THIS ROADWAY UNTIL THIS ROADWAY IS PERMANENTLY STRIPED. THE TEMPORARY TRAFFIC CONTROL SIGNS SHALL BE PAID FOR AS PART OF TRAFFIC CONTROL LUMP SUM.
3. ALL PERMANENT STRIPING AND PAVEMENT MESSAGES SHALL BE PLACED WITHIN 72 HOURS OF MAINLINE PAVING.



NO	DATE	BY	CKD	APPR	REVISION

T:\Traffic\dwg\CR 86 (Sims Rd)\from CSAH 13 to TH 65.dwg

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

PRINT NAME: Charles Cadenhead

SIGNATURE: Charles Cadenhead

DATE: 3/26/10 REG. NO. 40416

DRAWN BY MTH DATE 02/23/10

DESIGN BY ____ DATE ____

CHECKED BY ____ DATE ____

ANOKA COUNTY HIGHWAY DEPT.

STATE PROJECT NO. ____

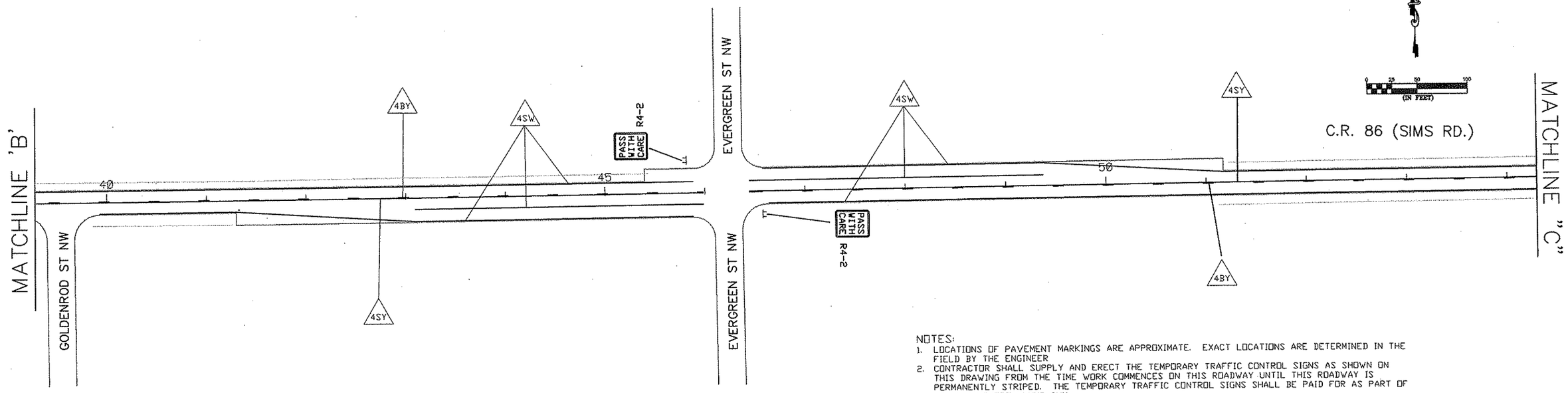
STATE AID PROJECT NO. ____

STATE AID PROJECT NO. ____

COUNTY PROJECT NO. 10-21-86

CR 86 (Sims Road)
TEMPORARY SIGNING
PERMANENT STRIPING
AND PAVEMENT MESSAGES

Sheet 12 of 16 Sheets



NOTES:
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2. CONTRACTOR SHALL SUPPLY AND ERECT THE TEMPORARY TRAFFIC CONTROL SIGNS AS SHOWN ON THIS DRAWING FROM THE TIME WORK COMMENCES ON THIS ROADWAY UNTIL THIS ROADWAY IS PERMANENTLY STRIPED. THE TEMPORARY TRAFFIC CONTROL SIGNS SHALL BE PAID FOR AS PART OF TRAFFIC CONTROL LUMP SUM.
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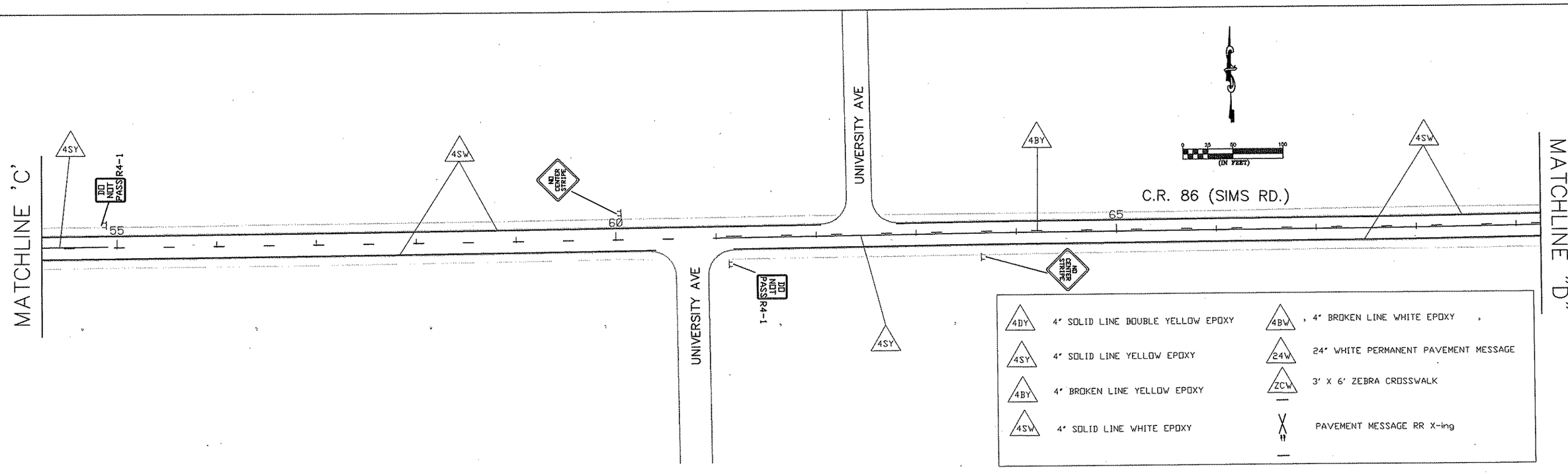


NO	DATE	BY	CKD	APPR	REVISION

T:\Traffic\dwg\CR 86 (Sims Rd)\from CSAH 13 to TH 65.dwg

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: Wesley Ladewig
SIGNATURE:
DATE: 3/26/10 REG. NO. 46416

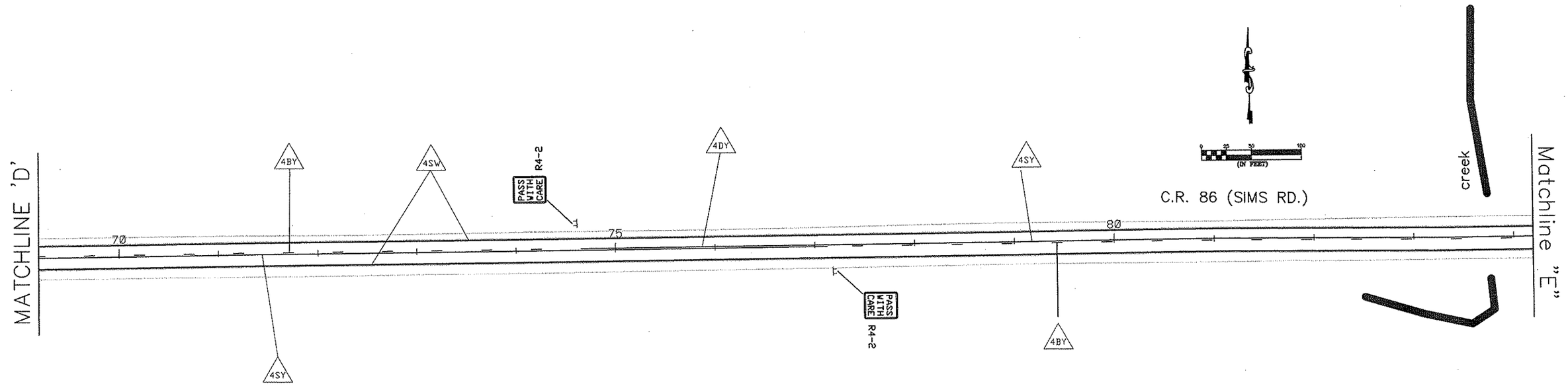
DRAWN BY MTH DATE 02/23/10
DESIGN BY ____ DATE ____
CHECKED BY ____ DATE ____

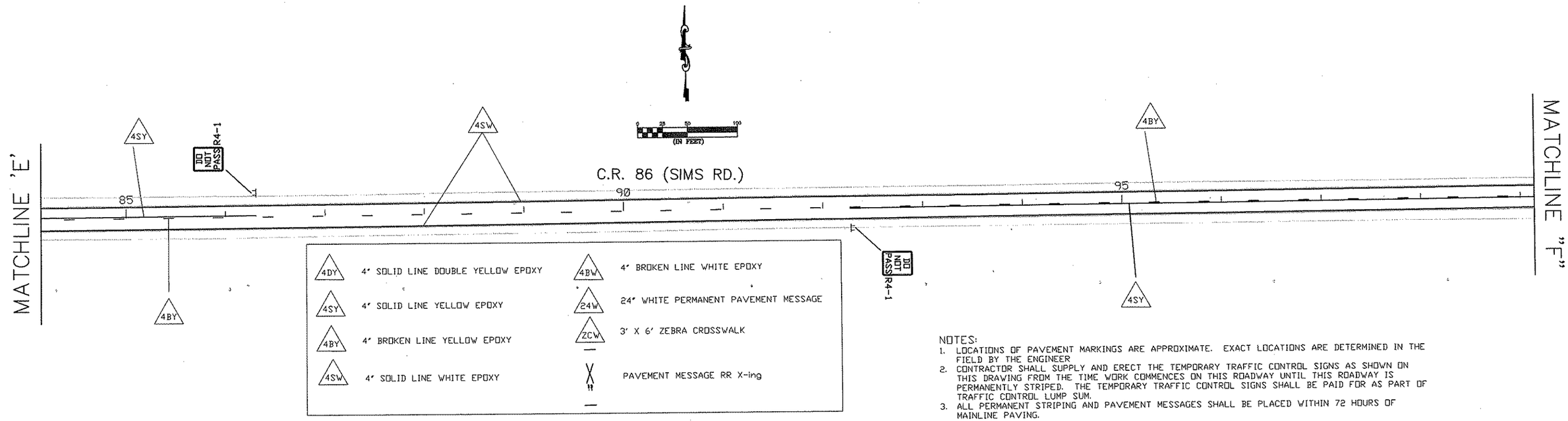
ANOKA COUNTY HIGHWAY DEPT.

STATE PROJECT NO. ____
STATE AID PROJECT NO. ____
STATE AID PROJECT NO. ____
COUNTY PROJECT NO. 10-21-86

CR 86 (Sims Road)
TEMPORARY SIGNING
PERMANENT STRIPING
AND PAVEMENT MESSAGES

Sheet 13 of 16 Sheets





NOTES:
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NO	DATE	BY	CKD	APPR	REVISION

T:\Traffic\dwg\CR 86 (Sims Rd)\from CSAH 13 to TH 65.dwg

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: Charles Cadenhead
SIGNATURE: Charles Cadenhead
DATE: 3/26/10 REG. NO. 40416

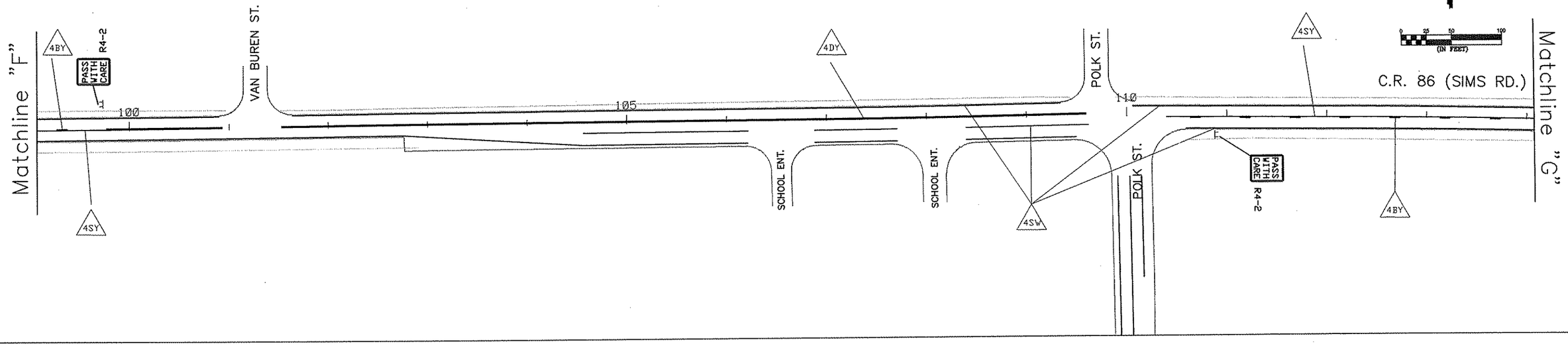
DRAWN BY MTH DATE 02/23/10
DESIGN BY ____ DATE ____
CHECKED BY ____ DATE ____

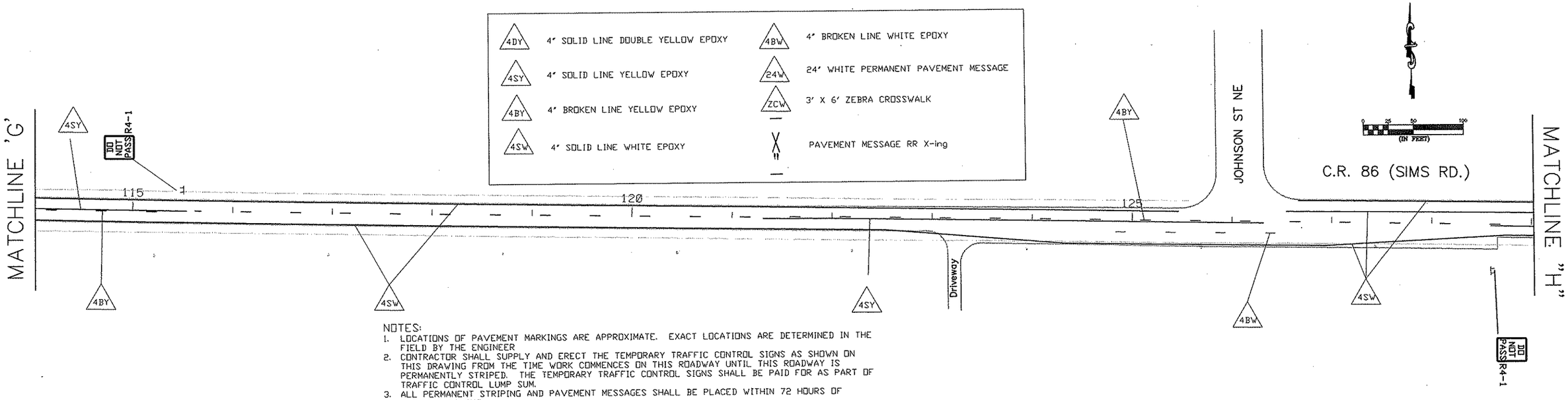
ANOKA COUNTY HIGHWAY DEPT.

STATE PROJECT NO. ____
STATE AID PROJECT NO. ____
STATE AID PROJECT NO. ____
COUNTY PROJECT NO. 10-21-86

CR 86 (Sims Road)
TEMPORARY SIGNING
PERMANENT STRIPING
AND PAVEMENT MESSAGES

Sheet 14 of 16 Sheets





NOTES:
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NO	DATE	BY	CKD	APPR	REVISION

I:\Traffic\dwg\CR 86 (Sims Rd)\from CSAH 13 to TH 65.dwg

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: Gwendolyn Cadenhead
SIGNATURE:
DATE: 3/26/10 REG. NO. 40416

DRAWN BY MTH DATE 02/23/10
DESIGN BY ____ DATE ____
CHECKED BY ____ DATE ____

ANOKA COUNTY HIGHWAY DEPT.

STATE PROJECT NO. ____
STATE AID PROJECT NO. ____
STATE AID PROJECT NO. ____
COUNTY PROJECT NO. 10-21-86

CR 86 (Sims Road)
TEMPORARY SIGNING
PERMANENT STRIPING
AND PAVEMENT MESSAGES

Sheet 15 of 16 Sheets

NOTES:
1. LOCATIONS OF PAVEMENT MARKINGS ARE APPROXIMATE. EXACT LOCATIONS ARE DETERMINED IN THE FIELD BY THE ENGINEER
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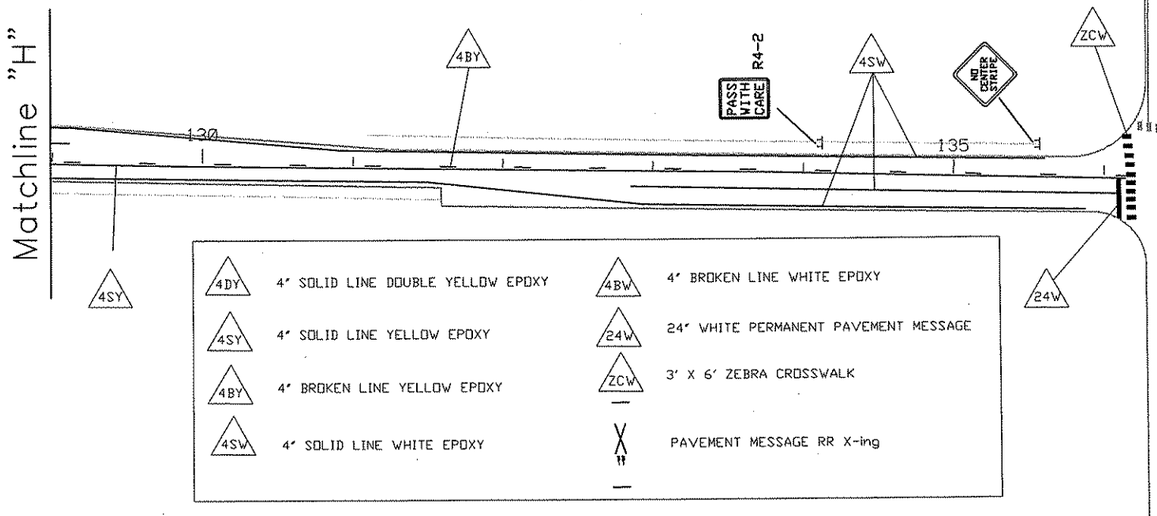
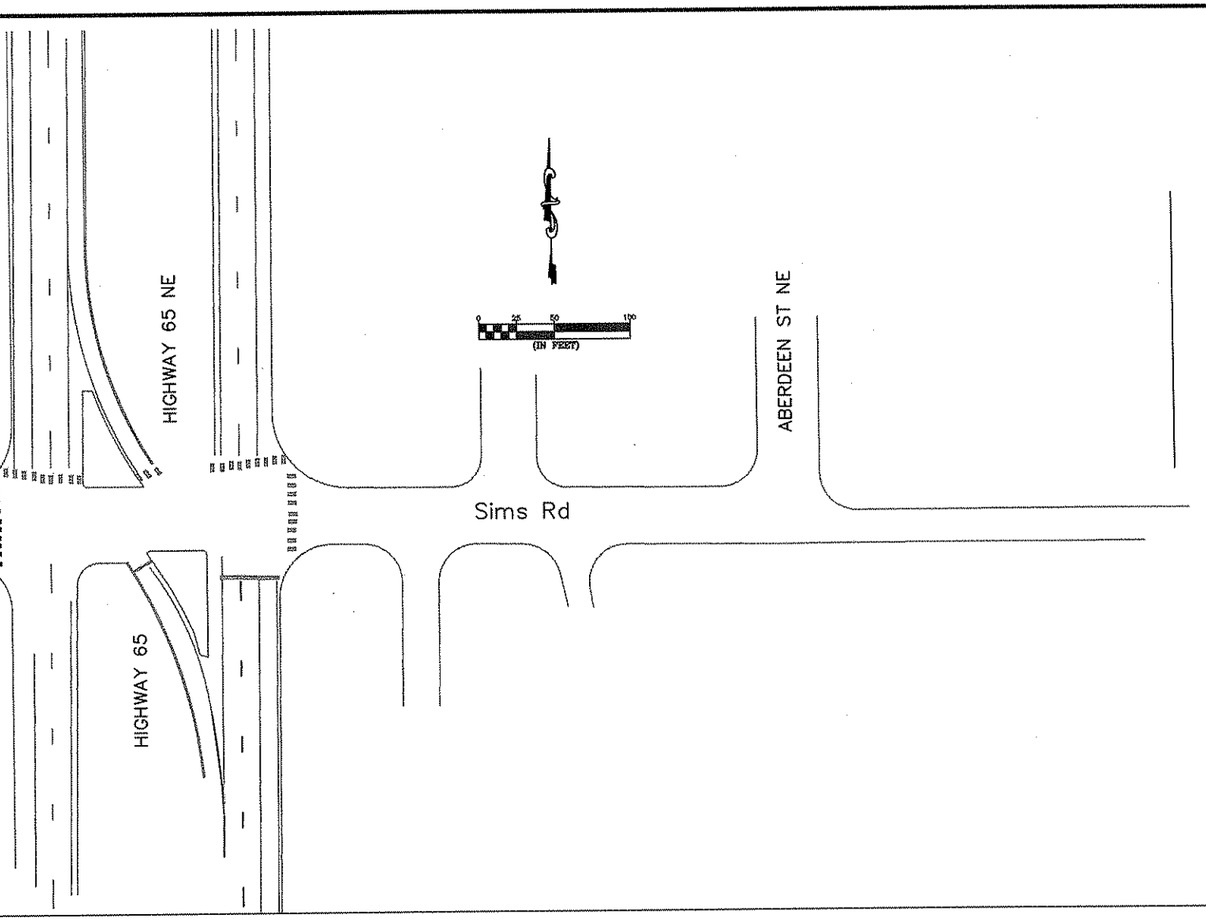




SIGN PANELS TYPE C

M.U.T.C.D. CODE	SIZE	PANEL AREA FT.^{2}	INSERT	QUANTITY	No. POST	MOUNTING HEIGHT (TO PANEL EDGE) FT.
W8-12	48" x 48"	16.00	NO CENTER STRIPE	4	2	7.0'
R4-1	24" x 30"	5.00	DO NOT PASS R4-1	10	1	7.0'
R4-2	24" x 30"	5.00	PASS WITH CARE R4-2	10	1	7.0'
R8-10	24" x 30"	5.00	STOP HERE WHEN FLASHING	2	1	7.0'

GENERAL NOTES:

1.) ALL TRAFFIC CONTROL DEVICES SHALL CONFORM AND BE PLACED IN ACCORDANCE TO THE "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MN MUTCD), AND PART VI, "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS".

NO	DATE	BY	CKD	APPR	REVISION

T:\Traffic\dwg\CR 86 (Sims Rd)\from CSAH 13 to TH 65.dwg

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: Charles Ladenburg
SIGNATURE: Charles Ladenburg
DATE: 3/26/10 REG. NO. 40416

DRAWN BY MTH DATE 02/23/10
DESIGN BY ____ DATE ____
CHECKED BY ____ DATE ____

ANOKA COUNTY HIGHWAY DEPT.

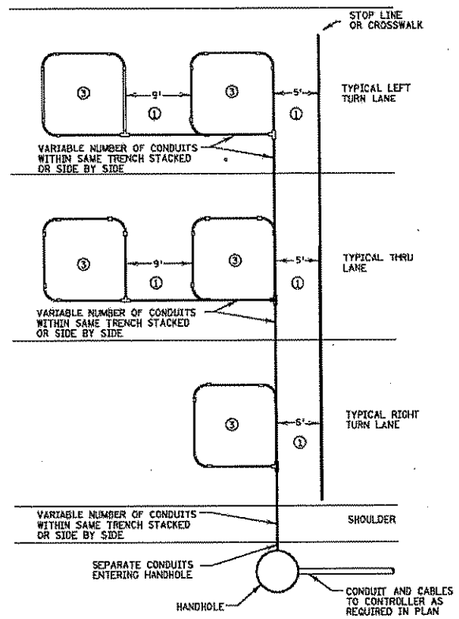
STATE PROJECT NO. ____
STATE AID PROJECT NO. ____
STATE AID PROJECT NO. ____
COUNTY PROJECT NO. 10-21-86

CR 86 (Sims Road)
TEMPORARY SIGNING
PERMANENT STRIPING
AND PAVEMENT MESSAGES

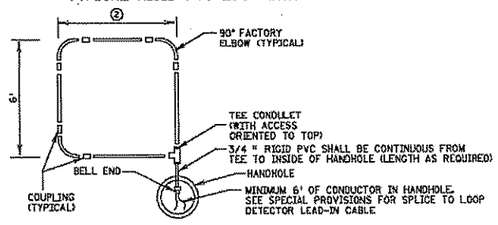
Sheet 16 of 16 Sheets

MNDOT SIGNAL LOOP DETAIL

TYPICAL CROSS STREET RIGID PVC LOOP DETECTOR LAYOUT



TYPICAL RIGID PVC LOOP DETECTOR DETAIL



NOTES:

SEE SHEET 2 FOR ADDITIONAL NOTES.

① DIMENSION SHOWN IS TYPICAL. USE GIVEN DIMENSION INDICATED ON PLAN LAYOUT.

② THIS DIMENSION MAY VARY ACCORDING TO LOOP SIZE ON PLAN LAYOUT.

③ 6' x 6' RIGID PVC LOOP DETECTOR (CENTERED IN THE LANE).

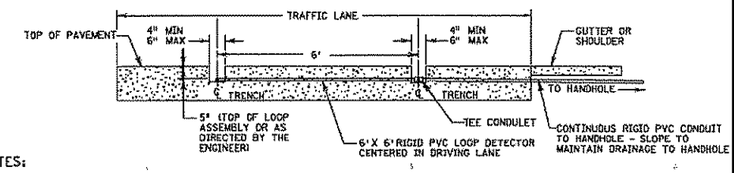
APPROVED DECEMBER 11, 2009	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE	STANDARD PLATE NO.
STATE DESIGN ENGINEER	PREFORMED RIGID PVC CONDUIT LOOP DETECTOR LAYOUT DETAILS	2357 2360 2565	8132A 1 OF 3

NOTES:

1. ROADWAY LOOP DETECTOR CONDUCTORS AND LOOP DETECTOR LEAD IN CABLES SHALL BE IN ACCORDANCE WITH MN/DOT SPEC 3815.
2. THE 3/4" RIGID PVC CONDUIT AND FITTINGS SHALL BE SCHEDULE 40. SEE SPEC. 3803.
3. THREE CORNERS OF EACH LOOP DETECTOR SHALL BE A 90° FACTORY ELBOW (6" RADIUS). THE FOURTH SHALL BE A RIGID PVC TEE CONDULET.
4. APPROVED RIGID PVC PRIMER AND CEMENT SHALL BE USED FOR THE RIGID PVC JOINTS.
5. ALL SLACK MUST BE REMOVED FROM LOOP DETECTOR CONDUCTORS WITHIN THE RIGID PVC.
6. THE ROADWAY LOOP DETECTOR CONDUCTORS (1/C#14) SHALL BE TWISTED THREE TURNS PER FOOT FROM THE RIGID PVC TEE CONDULET TO THE HANDHOLE.
7. ATTACH A FERROUS METAL ITEM IN OR ADJACENT TO THE TEE CONDULET COVER OR AS DIRECTED BY THE ENGINEER.
8. EACH LOOP DETECTOR CONDUIT TO THE HANDHOLE SHALL BE SLOPED TOWARDS THE HANDHOLE.
9. LOOP DETECTOR CONDUITS TO THE HANDHOLE MAY BE PLACED WITHIN THE SAME TRENCH.
10. THE LOOP DETECTOR ROADWAY CONDUCTORS SHALL EXTEND 6' TO 10' INTO THE HAND HOLE FOR SPLICING.
11. NO SPLICES ALLOWED IN CONDUIT.
12. IF BENDING OF THE RIGID PVC LOOP LEAD-IN CONDUIT IS REQUIRED, AN APPROPRIATE HEATING BLANKET OR DEVICE APPROVED BY THE ENGINEER SHALL BE USED. EXPOSED FLAME OR TORCHES ARE NOT ALLOWED.
13. TYPICAL SIZE OF LOOP DETECTORS ARE 6' x 6' AND 6' x 10'. REFER TO INTERSECTION LAYOUT FOR SPECIFIC LOOP DETECTORS TO BE PLACED.
14. ALL LOOP DETECTORS SHALL HAVE 4 TURNS OF CONDUCTORS.
15. THE LOOP DETECTOR ROADWAY CONDUCTORS AND THE LOOP DETECTOR LEAD-IN CABLE CONDUCTORS SHALL BE PROPERLY PREPARED AND CLEANED BEFORE SPLICING.
16. PRIOR TO FURNISHING AND INSTALLING THE APPROVED SPLICE KIT, THE CONTRACTOR SHALL SOLDER THE ENDS OF THE LOOP DETECTOR LEAD IN CONDUCTOR AND SHALL FURNISH AND INSTALL AN APPROPRIATE SIZED WIRE NUT TO THE SOLDERED ENDS PRIOR TO THE INSTALLATION OF THE SPLICE KITS.
17. LOOP DETECTORS SHALL BE SPLICED USING A MN/DOT APPROVED SPLICE KIT AS LISTED ON THE MN/DOT APPROVED PRODUCTS LIST (APL). MN/DOT APPROVED SPLICE KITS SHALL BE FURNISHED AND INSTALLED, EITHER ACCORDING TO MANUFACTURERS INSTRUCTIONS, OR BY AN ALTERNATIVE METHOD APPROVED BY THE ENGINEER.
18. SPLICE KITS SHALL BE FURNISHED AND INSTALLED IN HANDHOLES IN SUCH A MANNER AS TO ENSURE THAT EACH SPLICE KIT IS SUSPENDED AND/OR SECURED NEAR THE TOP OF THE HANDHOLE TO THE SATISFACTION OF THE ENGINEER. (PLACING SPLICE KITS ON TOP OF THE ELECTRICAL CABLES AND CONDUCTORS IS NOT ACCEPTABLE).

APPROVED DECEMBER 11, 2009	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE	STANDARD PLATE NO.
STATE DESIGN ENGINEER	PREFORMED RIGID PVC CONDUIT LOOP DETECTOR LAYOUT NOTES	2357 2360 2565	8132A 2 OF 3

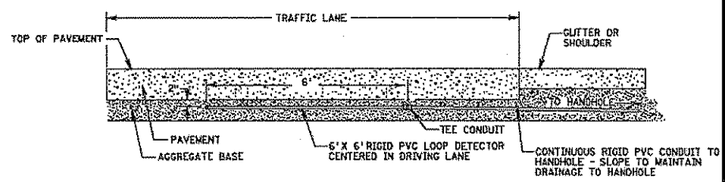
INPLACE PAVEMENT



NOTES:

1. USE THE LOOP DETECTOR TO BE PLACED FOR THE PURPOSE OF MARKING THE PAVEMENT LOCATION FOR THE MILLING OPERATION.
2. TO ACHIEVE FULL TRENCH DEPTH FOR CONDUIT PLACEMENT, MILL BEYOND THE DESIRED PAVEMENT MARKING.
3. PROVIDE A MINIMUM 5" CLEARANCE, MEASURED FROM THE TOP OF THE FINISHED PAVEMENT TO HIGHEST POINT OF LOOP ASSEMBLY (INCLUDING CONDUIT).
4. AN AIR COMPRESSOR UNIT (50 HP) IS REQUIRED FOR REMOVING ALL LOOSE MATERIAL FROM TRENCH PRIOR TO TACK COAT APPLICATION.
5. APPLY A TACK COAT AT A UNIFORM RATE TO THE BOTTOM AND EDGES OF THE MILLED AREA. USE AN EMULSIFIED ASPHALT PER SPEC. 2357.2A
6. MIXTURE USED TO FILL THE RETROFIT LOOP DETECTOR TRENCHES SHALL MEET THE REQUIREMENTS OF MN/DOT SPECIFICATION 2360. AGGREGATE SIZE A OR B WILL BE ALLOWED WHEN 2360 IS UTILIZED. OTHER WEARING COURSE MIXTURE TYPES ARE ALLOWED WHEN APPROVED BY THE ENGINEER.
7. COMPACTION SHALL BE OBTAINED BY THE ORDINARY COMPACTION METHOD. BACKFILL THE TRENCH WITH A MINIMUM OF TWO LIFTS AND COMPACT EACH LIFT. BEFORE COMPACTING THE FIRST LIFT ENSURE THAT THERE IS ADEQUATE MIXTURE ON EACH SIDE AND ABOVE THE CONDUIT SO THAT THE CONDUIT IS NOT DAMAGED DURING COMPACTION OPERATIONS.
8. THE COMPACTED MIXTURE IN THE TRENCH SHOULD BE LEFT 1/4 " TO 1/2 " ABOVE THE ADJACENT PAVEMENT SURFACE TO PROVIDE FOR ADDITIONAL COMPACTION BY TRAFFIC.
9. WHEN LOOP DETECTORS ARE MILLED INTO CONCRETE SURFACES, REMOVE RUBBLE, SANDBLAST AND AIR BLAST THE TRENCH TO REMOVE DEBRIS. FILL THE TRENCH WITH AN APPROVED MATERIAL LISTED ON THE MN/DOT CONCRETE UNIT'S WEBSITE FOR "PACKAGED DRY RAPID HARDENING CEMENTITIOUS MATERIALS FOR CONCRETE REPAIRS".
10. MILLING IS REQUIRED FOR ALL RIGID PVC LOOP INSTALLATIONS. WHEN LOOPS ARE MILLED INTO EXISTING MILLED SURFACE THAT WILL BE OVERLAYED WITH BITUMINOUS, THE MINIMUM TRENCH DEPTH SHALL BE NO LESS THAN THE HIGHEST LOOP ASSEMBLY IN THE TRENCH.
11. WHEN MILLING INTO EXISTING BITUMINOUS SURFACE, BE ADVISED THAT CONCRETE MAY BE ENCOUNTERED UNDER THE BITUMINOUS SURFACE.

NEW PAVEMENT



NOTES:

1. OBTAIN THE REQUIRED COMPACTION OF THE AGGREGATE BASE AFTER PLACEMENT OF LOOP DETECTOR AND LEAD-IN CONDUIT.
2. THE DEPTH OF THE LOOP MEASURED FROM THE TOP OF THE AGGREGATE BASE TO THE TOP OF THE CONDUIT SHALL NOT EXCEED 2".

APPROVED DECEMBER 11, 2009	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE	STANDARD PLATE NO.
STATE DESIGN ENGINEER	PREFORMED RIGID PVC CONDUIT LOOP DETECTOR TYPICAL INSTALLATION	2357 2360 2565	8132A 3 OF 3

FOR INFORMATION PURPOSES ONLY.

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\10-01-00\CR_86_(Cedar-TH65)\Plan\7 misc. signal plans.dgn 3/3/2010 7:16:10 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: CHARLES GUENHEAD

SIGNATURE:

DATE: LICENSE NO. # 40416

DRAWN BY JF DATE 3/1/2010

DESIGN BY JF DATE 3/1/2010

CHECKED BY JO DATE 3/1/2010

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

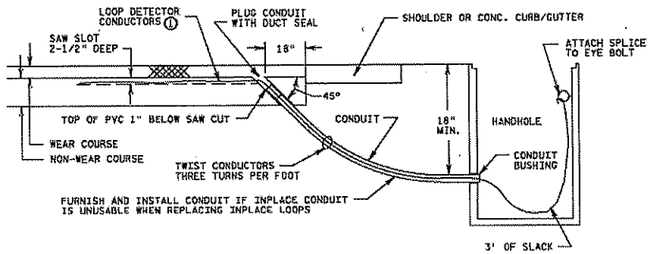
COUNTY PROJECT NO. 10-21-86

MISC. SIGNAL LAYOUTS

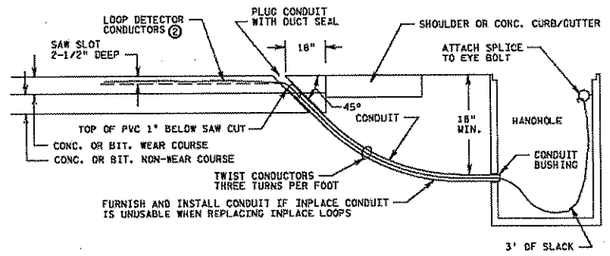
16A OF 16F

MNDOT SIGNAL LOOP DETAIL

MILL & OVERLAY CONSTRUCTION



INPLACE ROADWAYS



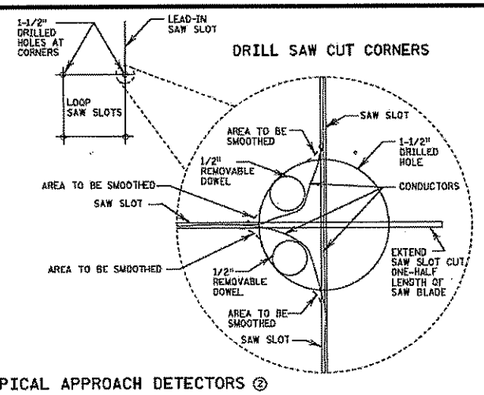
NOTES:

SEE SHEET 3 FOR ADDITIONAL NOTES

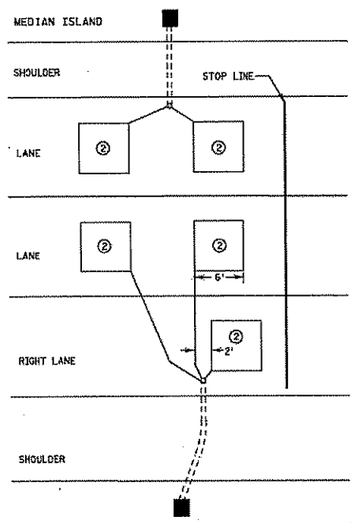
(1) SAW CUT LOOP DETECTOR BETWEEN NON-WEAR AND WEAR COURSES

(2) SAW CUT LOOP DETECTOR INTO WEAR COURSE OR CONC. SURFACE

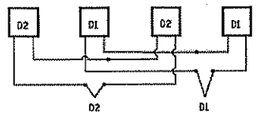
DRILL SAW CUT CORNERS



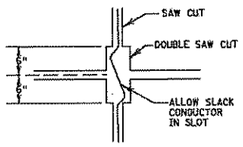
TYPICAL APPROACH DETECTORS (2)



MULTIPLE LOOP SERIES HOOKUP



JOINT/CRACK INSTALLATION (1)



NOTES:

SEE SHEET 3 FOR ADDITIONAL NOTES.

(1) LOOP LEADS SHALL NOT CROSS TRANSVERSE JOINTS IN CONCRETE PAVEMENT. MOVE A LOOP TO THE NEXT PANEL AND INSTALL A SEPARATE CONDUIT TO THE HANDHOLE IF ALL LOOPS WILL NOT FIT ONE PANEL AND MAINTAIN SEPARATIONS SHOWN.

(2) SEE PLAN LAYOUT FOR ACTUAL DETECTOR SIZE AND PLACEMENT LOCATION.

NOTES:

1. WHERE LOOP DETECTORS ARE TO BE FURNISHED AND INSTALLED AND THE ROADWAYS ARE TO BE SURFACED WITH NEW BITUMINOUS PAVEMENT, THE LOOP DETECTORS SHALL BE SAW CUT IN THE ROADWAY AND SEALANT MATERIAL PLACED TO THE SATISFACTION OF THE ENGINEER BEFORE THE BITUMINOUS WEARING COURSE IS PLACED BY THE BITUMINOUS PAVING CONTRACTOR; HOWEVER, THE ENGINEER MAY DIRECT THE CONTRACTOR NOT TO PLACE THE LOOP DETECTORS IN THE ROADWAY UNTIL PAVEMENT MARKINGS AND LANE STRIPING HAS BEEN DETERMINED AND/OR PLACED.
2. AREA TO BE SAW CUT SHALL BE THOROUGHLY CLEANED BY SWEEPING, WASHING, OR BLOWING SURFACE CLEAR OF DIRT AND DEBRIS.
3. LOOP DETECTORS AND LOOP DETECTOR HOME-RUN WILL BE MARKED ON PAVEMENT BY THE ENGINEER OR BY THE CONTRACTOR AS DIRECTED.
4. LOOP DETECTOR SAW CUTS SHALL BE A UNIFORM DEPTH OF 2-1/2" +/- 1/4" AND 1/8" WIDER THAN THE OUTER DIAMETER OF THE TUBING.
5. THE CONTRACTOR SHALL AVOID CROSSING CONCRETE JOINTS OR CRACKS. HOWEVER, IF A CONCRETE JOINT OR CRACK MUST BE CROSSED, THE CONTRACTOR SHALL USE THE JOINT/CRACK DETAIL SHOWN ON SHEET 2 OF 3.
6. ALL LOOP CORNERS SHALL BE SQUARE. CORNERS SHALL BE DRILLED WITH 1-1/2" DIAMETER DRILL TO A DEPTH OF 1/4" DEEPER THAN SAW CUT. CORNERS SHALL BE ROUNDED TO PREVENT DAMAGE TO THE CONDUCTORS OR TUBING.
7. ALL LOOP DETECTOR SAW CUTS SHALL BE CLEANED AND FLUSHED OF FOREIGN MATERIAL USING A COMBINATION OF AIR AND WATER, AND DRIED WITH COMPRESSED AIR PRIOR TO INSTALLATION OF LOOP DETECTOR CONDUCTORS. DRY SAWING DOES NOT REQUIRE WATER FLUSHING, HOWEVER. THE SAW CUT SHALL BE CLEANED OF ALL FOREIGN MATERIAL.
8. THE CONTRACTOR SHALL FURNISH AND INSTALL FROM THE END OF THE SAW-CUT TO THE ADJACENT HANDHOLE A MINIMUM OF A 3/4" CONDUIT FOR A SINGLE LOOP DETECTOR OR AN APPROPIATE SIZED CONDUIT BASED ON N.E.C. FILL RATIONS FOR 2 OR MORE LOOP DETECTORS.
9. BEFORE INSTALLATION OF LOOP DETECTOR CONDUCTORS, THE CONTRACTOR SHALL PLACE A BEAD OF APPROVED LOOP DETECTOR SEALANT IN SAW CUT SLOT TO WITHIN 6" OF THE CONDUIT THAT RUNS FROM THE END OF THE SAW-CUT TO THE ADJACENT HANDHOLE.
10. THE CONTRACTOR SHALL PLACE THE CLEAN AND DRIED LOOP DETECTOR CONDUCTORS CONTINUOUS WITH 4 TURNS OF WIRE AND WOUND IN A CLOCKWISE DIRECTION.
11. THE LOOP DETECTOR CONDUCTORS SHALL BE PUSHED TO THE BOTTOM OF THE SAW-CUT WITH A BLUNT INSTRUMENT TO AVOID DAMAGING TUBING OR CONDUCTORS. THE CONTRACTOR SHALL INSTALL 3/4" DIAMETER BY 2" BACKER ROD AT 2' INTERVALS TO ENSURE THAT THE CONDUCTORS ARE AT THE BOTTOM OF THE SAW CUT.
12. LOOP DETECTOR CONDUCTORS SHALL BE TWISTED 3 TURNS PER FOOT THROUGH THE CONDUIT TO THE SPLICE IN THE HANDHOLE.
13. LOOP DETECTOR LEAD-IN CONDUIT SHALL BE SEALED WITH DUCT SEAL OR OTHER APPROVED SEAL TO PREVENT LOOP DETECTOR SEALANT FROM ENTERING CONDUIT.
14. SEAL LOOP DETECTOR CONDUCTORS WITH A MN/DOT APPROVED LOOP DETECTOR SEALANT AS LISTED ON THE MN/DOT APPROVED PRODUCTS LIST (APL) AND IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
15. THE LOOP DETECTOR ROADWAY CONDUCTORS AND THE LOOP DETECTOR LEAD-IN CABLE CONDUCTORS SHALL BE PROPERLY PREPARED AND CLEANED BEFORE SPLICING. ROUGHEN CABLE JACKET WITH SAND PAPER TO ENSURE GOOD ADHESION WITH SPLICE KIT.
16. LOOP DETECTORS SHALL BE SPLICED USING AN APPROVED SPLICE KIT AS LISTED ON THE MN/DOT APPROVED PRODUCTS LIST (APL). MN/DOT APPROVED SPLICE KITS SHALL BE INSTALLED, EITHER ACCORDING TO MANUFACTURES INSTRUCTIONS, OR BY AN ALTERNATE METHOD APPROVED BY THE ENGINEER.
17. PRIOR TO FURNISHING AND INSTALLING THE APPROVED LOOP DETECTOR SPLICE KIT, THE CONTRACTOR SHALL SOLDER THE ENDS OF THE LOOP DETECTOR LEAD-IN CONDUCTORS TO THE ROADWAY LOOP DETECTOR CONDUCTORS, AND SHALL FURNISH AND INSTALL AN APPROPRIATE SIZED WIRE NUT TO THE SOLDERED ENDS PRIOR TO INSTALLATION OF THE SPLICE KIT.
18. SPLICE KITS SHALL BE FURNISHED AND INSTALLED IN HANDHOLES IN SUCH A MANNER AS TO ENSURE THAT EACH SPLICE KIT IS SUSPENDED AND/OR SECURED NEAR THE TOP OF THE HANDHOLE TO THE SATISFACTION OF THE ENGINEER (PLACING SPLICE KITS ON TOP OF THE ELECTRICAL CABLES AND CONDUCTORS IS NOT ACCEPTABLE).

APPROVED DECEMBER 11, 2009	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE	STANDARD PLATE NO.
STATE DESIGN ENGINEER	SAW CUT LOOP DETECTORS LOOP/HANDHOLE INSTALLATION	2565	8130E 1 OF 3

APPROVED DECEMBER 11, 2009	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE	STANDARD PLATE NO.
STATE DESIGN ENGINEER	SAW CUT LOOP DETECTORS DETAILS	2565	8130E 2 OF 3

APPROVED DECEMBER 11, 2009	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE	STANDARD PLATE NO.
STATE DESIGN ENGINEER	SAW CUT LOOP DETECTORS NOTES	2565	8130E 3 OF 3

FOR INFORMATION PURPOSES ONLY.

NO	DATE	BY	CKD	APPR	REVISION

NAME: P:\10-01-00\CR_86_(Cedar-TH65)\Plan\7 misc. signal plans.dgn 3/3/2010 7:16:25 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: CHARLES GADENHEAD

SIGNATURE: N/A

DATE: _____ LICENSE NO. # 40416

DRAWN BY JF DATE 3/1/2010

DESIGN BY JF DATE 3/1/2010

CHECKED BY JO DATE 3/1/2010

ANOKA COUNTY

ANOKA COUNTY HIGHWAY DEPT.

COUNTY PROJECT NO. 10-21-86

MISC. SIGNAL LAYOUTS

16B OF 16F

PLOTTED/REVISED: 2/16/2010

DISTRICT: METRO
IPLOT NAME: layout
PATH & FILENAME: IP_PWP:d07813#FT222081_sgl.dgn

NOTES:

1) SEE SPECIAL PROVISIONS FOR PEDESTRIAN INDICATIONS, RED LED INDICATIONS, PVC HANDHOLES WITH METAL FRAMES AND COVERS AND STATE FURNISHED MATERIALS.

2) EACH SIGNAL SHALL HAVE A BACKGROUND SHIELD.

3) LOCATIONS OF POLES, PEDESTALS, PAD, HANDHOLES AND LOOP DETECTORS SHALL BE DETERMINED BY MN/DOT TRAFFIC OFFICE PERSONNEL.

4) FOR SIGNS AND PAVEMENT MARKINGS SEE SHEET NOS. 26 AND 27.

5) A 21 mm HALF COUPLING, 21 mm PIPE NIPPLE AND CONDUIT OUTLET BODY FOR EMERGENCY VEHICLE PRE-EMPTION EQUIPMENT SHALL BE FURNISHED AND INSTALLED APPROXIMATELY 1.8 m FROM THE END OF MAST ARMS 1, 4, 5, AND 8.

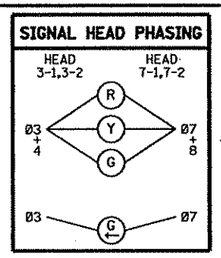
6) FOR SERVICE CABINET DETAILS SEE SHEET NO. 23.

7) FOR NMC LOOP DETAILS SEE SHEET NO. 25.

8) SIGNAL FACES 3-1, 3-2, 7-1, AND 7-2 SHALL BE OPTICALLY PROGRAMMED.

9) CONSTRUCT 100 mm CONCRETE WALK BETWEEN EDGE OF BITUMINOUS ROADWAY AND POLES 1, 2, 5, AND 6 (SEE SPECIAL PROVISIONS).

SIGNAL HEAD PHASING



3 PEDESTAL FOUNDATION
4.6 m PEDESTAL POLE AND BASE
TYPE 5A
R9-3a SIGN (NO PED) FACING POLE 2
EXTEND INTO HH 7
78 mm RSC
1-12/C #12

5 PA100 POLE FOUNDATION
TYPE PA100-A-12.2-D12.2-2.7 (DAVIT AT 350°)
2-SWING AWAY HINGES
2-ONE WAY SIGNALS OVERHEAD AT 0 m AND 3.4 m
TYPE 10A POLE MOUNTED AT 90°
TYPE 10B POLE MOUNTED AT 180°
ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT PHASES 6&1
LUMINAIRE-200 W HPS
PED PUSH BUTTON AND SIGN (R10-4C)
EXTEND INTO HH 9
78 mm RSC
2-12/C #12
2-3/C #12
1-3/C #12 (LUM.)
1-3/C #20

4 PA90 POLE FOUNDATION
TYPE PA90-A-9.1-D12.2-2.7 (DAVIT AT 350°)
2-SWING AWAY HINGES
ONE WAY SIGNAL OVERHEAD AT 0 m
TYPE 10A POLE MOUNTED AT 270°
ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT PHASE 8
LUMINAIRE-200 W HPS
R9-3a SIGN (NO PED) FACING POLE 5
EXTEND INTO HH 8
78 mm RSC
1-12/C #12
1-3/C #12
1-3/C #12 (LUM.)
1-3/C #20

6 PA90 POLE FOUNDATION
TYPE PA90-A-9.1-D12.2-2.7 (DAVIT AT 350°)
2-SWING AWAY HINGES
ONE WAY SIGNAL OVERHEAD AT 0 m
TYPE 10B POLE MOUNTED AT 270°
LUMINAIRE-200 W HPS
2-PED PUSH BUTTONS AND SIGNS (R10-4C)
EXTEND INTO HH 11
78 mm RSC
1-12/C #12
4-3/C #12
1-3/C #12 (LUM.)

8 PA90 POLE FOUNDATION
TYPE PA90-A-9.1-D12.2-2.7 (DAVIT AT 350°)
2-SWING AWAY HINGES
ONE WAY SIGNAL OVERHEAD AT 0 m
TYPE 10B POLE MOUNTED AT 270°
TYPE 30A POLE MOUNTED AT 180°
ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT PHASE 4
LUMINAIRE-200 W HPS
PED PUSH BUTTON AND SIGN (R10-4C)
EXTEND INTO HH 16
78 mm RSC
1-12/C #12
3-3/C #12
1-3/C #12 (LUM.)
1-3/C #20

2 PA90 POLE FOUNDATION
TYPE PA90-A-9.1-D12.2-2.7 (DAVIT AT 350°)
2-SWING AWAY HINGES
ONE WAY SIGNAL OVERHEAD AT 0 m
TYPE 10B POLE MOUNTED AT 270°
LUMINAIRE-200 W HPS
PED PUSH BUTTON AND SIGN (R10-4C)
EXTEND INTO HH 3
78 mm RSC
1-12/C #12
2-3/C #12
1-3/C #12 (LUM.)

1 PA100 POLE FOUNDATION
TYPE PA100-A-13.7-D12.2-2.7 (DAVIT AT 350°)
2-SWING AWAY HINGES
2-ONE WAY SIGNALS OVERHEAD AT 0 m AND 3.4 m
2-TYPE 10B POLE MOUNTED AT 0° AND 270°
ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT PHASES 2&5
LUMINAIRE-200 W HPS
RADIO INTERCONNECT ANTENNA
2-PED PUSH BUTTONS AND SIGNS (R10-4C)
EXTEND INTO HH 17
78 mm RSC
2-12/C #12
3-3/C #12
1-3/C #12 (LUM.)
1-3/C #20
1-COAXIAL CABLE

7 PEDESTAL FOUNDATION
4.6 m PEDESTAL POLE AND BASE
TYPE 5E
PED PUSH BUTTON AND SIGN (R10-4C)
EXTEND INTO HH 15
78 mm RSC
1-12/C #12
1-3/C #12

103 mm RSC
2-12/C #12
5-3/C #12
1-3/C #12 (LUM.)
5-2/C #14

103 mm RSC
3-12/C #12
8-3/C #12
1-3/C #12 (LUM.)
1-3/C #20
5-2/C #14

103 mm RSC
4-12/C #12
3-3/C #12
1-3/C #12 (LUM.)
2-3/C #20
6-2/C #14

53 mm NMC
1-3/C #12 (LUM.)

B SOP - INPLACE WOOD POLE
53 mm RSC RISER WITH WEATHERHEAD
53 mm RSC TO HH 18
WITH 3-1/C #2

A EQUIPMENT PAD
CONTROLLER AND CABINET
SERVICE EQUIPMENT (PAD MOUNTED)
LOAD CENTER TO CABINET
35 mm RSC
2-1/C #6
1-1/C #6 INS. GR.
LOAD CENTER TO HH 17
53 mm RSC
2-3/C #12 (LUM.)
METER TO HH 18
53 mm RSC
3-1/C #2

CONTROLLER CABINET TO HH 1
2-78 mm RSC
5-12/C #12
5-3/C #12
2-3/C #20
11-2/C #14

CONTROLLER CABINET TO HH 17
2-78 mm RSC
5-12/C #12
11-3/C #12
2-3/C #20
5-2/C #14
1-COAXIAL CABLE

STUB OUT THREAD AND CAP
78 mm RSC

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS

PEDESTRIAN PUSH BUTTONS SHALL BE LOCATED AS SHOWN ABOVE

SIGNAL SYSTEM OPERATION

- THE SIGNAL SYSTEM FLASH MODE IS ALL RED.
- PHASES 1 AND 5 ARE PROTECTED LEFT TURN PHASES. PHASES 3 AND 7 ARE INSIDE CLEARANCE PHASES.

NMC LOOP DETECTORS

NUMBER	SIZE (METERS)	LOCATION
D1-1	1.7 x 1.7	12
D1-2	1.7 x 1.7	3
D2-1	1.7 x 1.7	191
D2-2	1.7 x 1.7	191
D3-1	1.7 x 3.6	AS SHOWN
D4-1	1.7 x 1.7	76
D4-2	2 - 1.7 x 1.7	AS SHOWN
D4-3	2 - 1.7 x 1.7	3 & 12
D5-1	1.7 x 1.7	12
D5-2	1.7 x 1.7	3
D6-1	1.7 x 1.7	191
D6-2	1.7 x 1.7	191
D7-1	1.7 x 3.6	AS SHOWN
D8-1	1.7 x 1.7	76
D8-2	2 - 1.7 x 1.7	AS SHOWN
D8-3	2 - 1.7 x 1.7	3 & 12

1) LOCATION = DISTANCE FROM STOP LINE OR CROSSWALK TO DETECTOR IN METERS

SIGNAL FACES

ALL INDICATIONS SHALL BE 300mm

FACE	R LED	Y	G	RLTA LED	YLTA	GLTA
1-1				←	←	←
1-2				←	←	←
2-1	●	●	●			
2-2	●	●	●			
2-3	●	●	●			
3-1	●	●	●			←
3-2	●	●	●			←
4-1	●	●	●			
4-2	●	●	●			
5-1				←	←	←
5-2				←	←	←
6-1	●	●	●			
6-2	●	●	●			
6-3	●	●	●			
7-1	●	●	●			←
7-2	●	●	●			←
8-1	●	●	●			

REVISED AT MN/DOT
BY SJK/MJF 10/29/08
UPDATED: ADDED RADIO
INTERCONNECT PER SP 8825-208

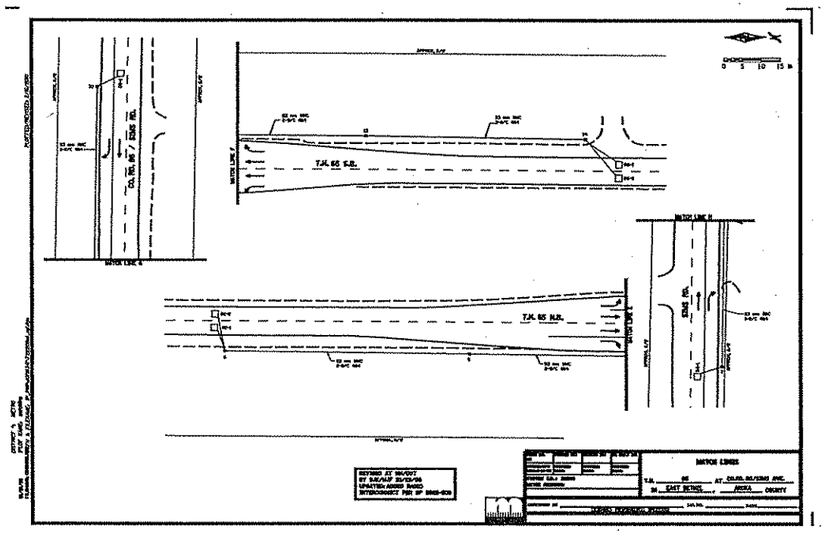
STATE AID PROJECT NO. _____
STATE PROJECT NO. _____
CITY PROJECT NO. _____
COUNTY PROJECT NO. 10-21-86

MISCELLANEOUS SIGNAL SHEETS

Sheet 16C of 16F Sheets

minnesota: metric

NOTE: THIS PLAN SHEET IS BEING PROVIDED FOR INFORMATIONAL PURPOSES ONLY



STATE AID PROJECT NO. _____	MISCELLANEOUS SIGNAL SHEETS
STATE PROJECT NO. _____	
CITY PROJECT NO. _____	Sheet 16D of 16F Sheets
COUNTY PROJECT NO. 10-21-86	

NOTE: THIS PLAN SHEET IS BEING PROVIDED FOR INFORMATIONAL PURPOSES ONLY

PLOTTED/REVISED: 2/16/2010

DISTRICT *: METRO
IPLOT NAME: wire1
PATH & FILENAME: IP_PWP-d0781347\T22208wl_sgl.dgn

CONTROLLER CABINET

TO HH 1
1-23

1 D4-3
2 D4-2
3 D4-1
4 RED YEL GRN NEU GLTA (7-1) RLTA YLTA NEU GLTA SPR SPR EQG (1-2)
5 PB2-1 NEU SPR
6 WLK NEU DWK (P2-1)
7 D2-2
8 D2-1
9 D5-2
10 D5-1
11 D7-1
12 RLTA YLTA GLTA (1-1) NEU SPR SPR NEU SPR SPR SPR EQG
13 RED YEL GRN NEU (8-1) RED YEL GRN NEU SPR SPR SPR EQG (8-2)
14 Ø8 EVP LIGHT NEU SPR
15 Ø8 EVP DETECTOR
16 D8-2
17 D8-3
18 RED YEL GRN NEU (6-3) RED YEL GRN NEU (6-2) WLK DWK SPR EQG (P6-2)

24 RED YEL GRN NEU (2-3) RED YEL GRN (2-2) NEU WLK DWK SPR EQG (P4-1)
25 RED YEL GRN NEU GLTA (7-2) WLK DWK NEU RED YEL GRN EQG (P2-2, 2-1)
26 PB2-2 NEU SPR
27 SPR NEU PB4-1
28 Ø2 & Ø5 EVP LIGHT NEU SPR
29 Ø2 & Ø5 EVP DETECTOR
30 RED YEL GRN NEU (4-2) RED YEL GRN NEU (4-1) WLK DWK SPR EQG (P4-2)
19 RED YEL GRN NEU GLTA (3-2) RED YEL NEU GRN SPR SPR EQG (6-1)
20 PB6-2 NEU SPR
21 Ø6 & Ø1 EVP LIGHT NEU SPR
22 Ø6 & Ø1 EVP DETECTOR
23 D8-1

31 SPR NEU PB4-2
32 WLK NEU DWK (P4-3)
33 Ø4 EVP LIGHT NEU SPR
34 Ø4 EVP DETECTOR
35 D1-1
36 D1-2
37 D3-1
38 RLTA YLTA GLTA (5-1) NEU SPR WLK DWK NEU (P4-5) WLK DWK (P4-4) SPR EQG
39 SPR NEU PB4-3
40 RED YEL GRN NEU GLTA (3-1) RLTA YLTA NEU GLTA (5-2) SPR SPR EQG
41 SPR NEU PB4-4
42 PB6-1 NEU SPR
43 WLK NEU DWK (P6-1)
44 WLK NEU DWK (P4-6)
45 D6-1
46 D6-2
90 ANTENNA COAXIAL CABLE

2-1/C #6 49

LOAD CENTER

47, 48
47 LUMINAIRES 2 3 4
48 LUMINAIRES 1 5 6
49 2-1/C #6 SIGNAL SERVICE
50 3-1/C #2
GROUND ROD

HH 18
50 S.O.P.

3-1 5-2 6
40
P6-1 43
P4-6 44
PB4-4 41
PB6-1 42
LUMINAIRE 48 5

HH 11 — 45, 46, — HH 12 — 45, 46, — HH 13 — 45, 46, — HH 14
45 D6-1
46 D6-2

2-2 2-3 P4-1 1
P2-2 7-2 2-1
P4-5 5-1 P4-4 7
4-1 4-2 P4-2 8

24 25 38 39 PB4-3 40-46, 48
Ø2 & Ø5 EVP LIGHT TO EVP HUB 28 PB2-2 26
Ø2 & Ø5 EVP DETECTOR TO EVP HUB 29 PB4-1 27
LUMINAIRE 1 48 90 ANTENNA COAXIAL CABLE

HH 15
35 D1-1
37 D3-1
36 D1-2

30 PB4-2 31
Ø4 EVP LIGHT TO EVP HUB 33 P4-3 32
Ø4 EVP DETECTOR TO EVP HUB 34 LUMINAIRE 48 6

HH 16
30-46, 48
30-46, 48

HH 17
47, 48
24-46, 90

TO HH 1
47

CONDUCTOR COLOR CODING

	R O BL WH G	5/C #12
12/C #12	R/BLK O/BLK BL/BLK WH/BLK BLK BLK/WH G/BLK G	
	R WH BLK	3/C #12
	R OR O WH OR YEL BLK OR BL	3/C #20
2-1/C #6	BLK WH	
	BLK CLEAR	2/C #14

NOTE: ALL TERMINAL BLOCK CONNECTIONS SHALL BE ARRANGED AS SPECIFIED ABOVE

REVISED AT MN/DOT
BY SJK/MJF 10/29/08
UPDATED: ADDED RADIO
INTERCONNECT PER SP 8825-208

DRAWN BY:	REVISED BY:	REVISED BY:	AS BUILT BY:
SJK			

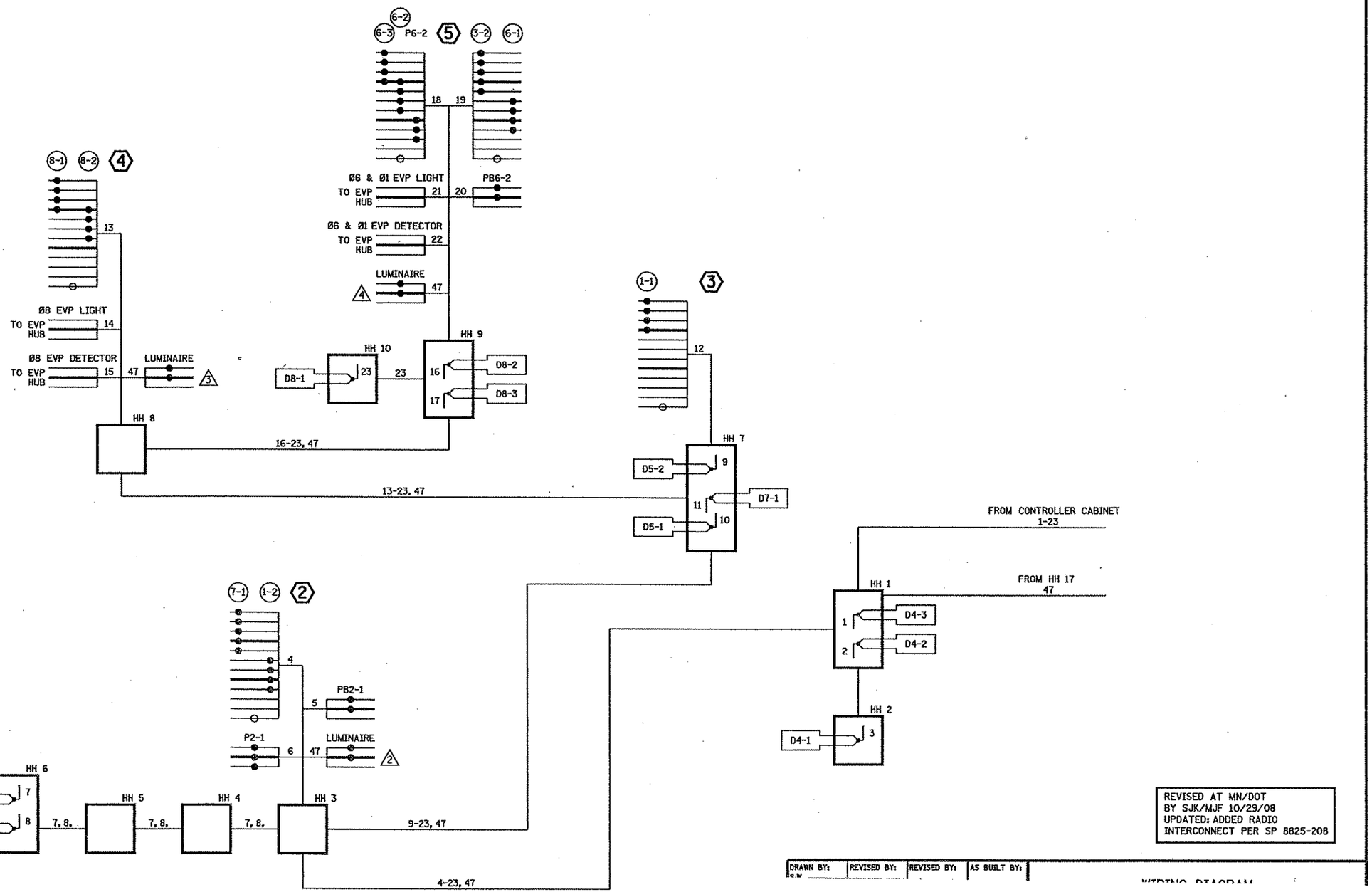
STATE AID PROJECT NO. _____
STATE PROJECT NO. _____
CITY PROJECT NO. _____
COUNTY PROJECT NO. 10-21-86

MISCELLANEOUS SIGNAL SHEETS

Sheet 16E of 16F Sheets

minnesota metric

NOTE: THIS PLAN SHEET IS BEING PROVIDED FOR INFORMATIONAL PURPOSES ONLY



REVISED AT MN/DOT
BY SJK/MJF 10/29/08
UPDATED: ADDED RADIO
INTERCONNECT PER SP 8825-208

DRAWN BY:	REVISED BY:	REVISED BY:	AS BUILT BY:

WIRING DIAGRAM

STATE AID PROJECT NO. _____
STATE PROJECT NO. _____
CITY PROJECT NO. _____
COUNTY PROJECT NO. 10-21-86

MISCELLANEOUS SIGNAL SHEETS

Sheet 16F of 16F Sheets

minnesota:metric

NOTE: THIS PLAN SHEET IS BEING PROVIDED FOR INFORMATIONAL PURPOSES ONLY

DISTRICT *: METRO
IPLOT NAME: wire2
PATH & FILENAME: IP_PWPd07BI34\T22206w2_sgl.dgn