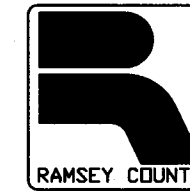


RAMSEY COUNTY
DEPARTMENT OF PUBLIC WORKS
PLAN FOR THE MILL AND BITUMINOUS OVERLAY OF



McKnight Road
County Project P-3074

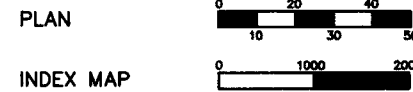
BETWEEN: Burns Ave. to Minnehaha Ave.

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	ESTIMATED QUANTITIES
3	TYPICAL SECTIONS
4	NMC LOOP DETAILS
5-8	PLAN SHEETS
9-13	INFORMATION ONLY SHEETS

THIS PLAN CONTAINS 13 SHEETS

SCALES IN FEET



GROSS LENGTH 5424.89 FEET 1.03 MILES
BRIDGE LENGTH -----
EXCEPTIONS -----
NET LENGTH 5424.89 FEET 1.03 MILES

PLAN SYMBOLS

- STATE LINE
- COUNTY LINE
- TOWNSHIP OR RANGE LINE
- SECTION LINE
- QUARTER LINE
- SIXTEENTH LINE
- EXISTING RIGHT OF WAY LINE
- PROPOSED RIGHT OF WAY LINE
- PROPERTY LINE
- CORPORATE OR CITY LIMITS
- RAILROAD
- RAILROAD RIGHT-OF-WAY
- RIVER OF CREEK
- CULVERT
- GUARDRAIL
- WOOD FENCE
- BARBED WIRE FENCE
- WOVEN WIRE FENCE
- CHAIN LINK FENCE
- TIMBER WALL
- STONE WALL
- HEDGE
- RAILROAD CROSSING SIGN
- CROSSING GATE
- MEANDER CORNER
- SLOPE EASEMENT (CONST. LIMITS)
- MARSH
- DECIDUOUS TREE
- CONIFEROUS TREE
- BUSH OR SHRUB
- WOODS
- CATCH BASIN
- BRIDGE
- IRON PIPE OR ROD
- MONUMENT (STONE, CONCRETE OR METAL)
- WOODEN HUB

UTILITY SYMBOLS

- UTILITY POLE
- GUY OR ANCHOR
- STREET LIGHT
- TELEPHONE PEDESTAL
- GAS MAIN
- WATER MAIN
- TELEPHONE VAULT
- ELECTRIC VAULT
- TELEPHONE CABLE
- ELECTRIC CABLE
- STORM SEWER
- SANITARY SEWER
- SEWER MANHOLE
- GATE VALVE
- CONTROLLER CABINET
- EXISTING HYDRANT
- CABLE TELEVISION-BURIED
- FIBER OPTIC CABLE
- TRAFFIC SIGNAL LINE
- TRAFFIC SIGNAL HAND HOLE

FOR PLANS AND UTILITIES SYMBOLS SEE MN/DOT TECHNICAL MANUAL.

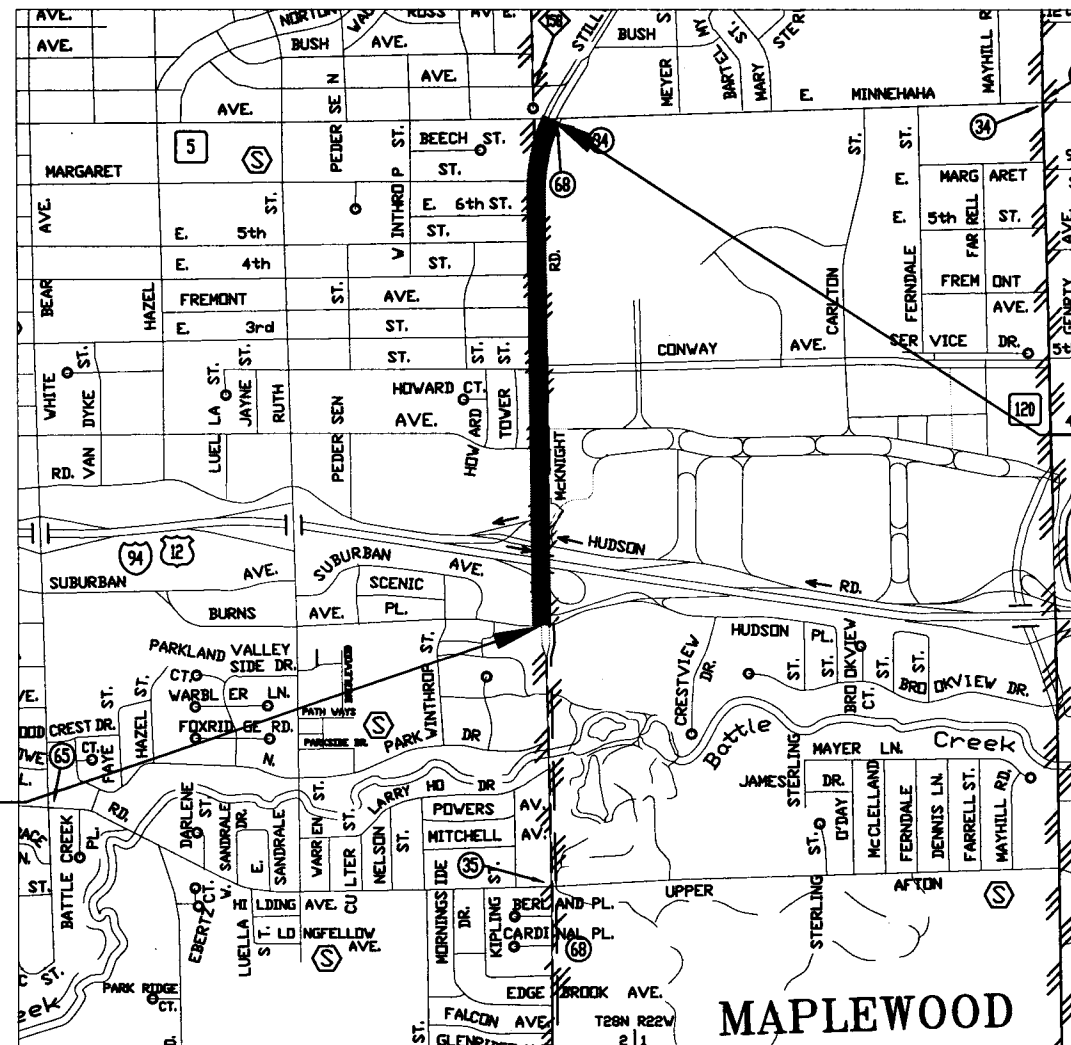
-GOVERNING SPECIFICATIONS-

THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL APPLY.

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO THE MMUTCD, INCLUDING FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS, SEE [HTTP://WWW.DOT.STATE.MN.US/TRAFFICENG/](http://www.dot.state.mn.us/trafficing/)

ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND ORDINANCES WILL BE COMPLIED WITH IN THE CONSTRUCTION OF THIS PROJECT.

BEGIN P-3074
McKNIGHT ROAD
STA. 0+00.00



END P-3074
McKNIGHT ROAD
STA. 54+24.89

DESIGN DESIGNATION

	BURNS AVE. TO I-94	I-94 TO CONWAY ST.	CONWAY ST. TO MINNEHAHA AVE.
PRESENT ADT (2008)	10600	17800	9600
PROJECTED ADT (2028)	15900	26700	14400
FUNCTIONAL CLASS	MINOR ARTERIAL	MINOR ARTERIAL	MINOR ARTERIAL
TRAFFIC LANES	4	4	4
PARKING LANES	0	0	0

BASED ON STOPPING DISTANCE
HEIGHT OF EYE: 3.50 FEET
HEIGHT OF OBJECT: 0.50 FEET

DRAWN BY J. MEYER DATE 12-23-2008
CHECKED BY _____ DATE _____

PLAN REVISIONS		
DATE	SHEET NO. & DESCRIPTION	BY

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.

Kathy Jaschke REG. NO. 21864 DATE 6/30/09
KATHY JASCHKE

RECOMMENDED FOR APPROVAL *[Signature]* DATE 6/30/09
COUNTY ENGINEER

28-262



ESTIMATED QUANTITIES					
Item Number	Item	Unit	Estimated Quantity	100% County Project P-3074	
2021.501	Mobilization	L.S.	1		
2232.501	Mill Bituminous Surface (1 1/2")	S.Y.	42,849		
2357.502	Bituminous Material for Tack Coat	Gal.	2,142		
2360.502*	Type SPWEB440E (1 1/2") Wear Course Mix (with scrap shingles)	Ton	3,696		
2360.502	Type SPWEB440E (1 1/2") Wear Course Mix (without scrap shingles) ALTERNATE BID	Ton	3,696		
2504.602	Adjust Valve Box	Each	1		
2506.522	Adjust Frame & Ring Casting	Each	3		
2563.601	Traffic Control	L.S.	1		
2565.603	NMC Loop Detector 6' X 6'	L.F.	1,068		
2582.501	Pavement Message (Left Arrow) Epoxy	Each	6		
2582.501	Pavement Message (Right Arrow) Epoxy	Each	1		
2582.501	Pavement Message (Left Arrow) Thermoplastic	Each	4		
2582.501	Pavement Message (Left Arrow) Polypreform	Each	5		
2582.501	Pavement Message (Right Arrow) Polypreform	Each	6		
2582.501	Pavement Message (Left/Thru Arrow) Polypreform	Each	2		
2582.501	Pavement Message (Right/Thru Arrow) Polypreform	Each	2		
2582.501	Pavement Message (Only) Polypreform	Each	2		
2582.502	4" Solid Line White Epoxy (20 mills)	L.F.	9,510		
2582.502	4" Broken Line White Epoxy (20 mills)	L.F.	2,387		
2582.502	4" Yellow Line - Solid or Broken Epoxy (20 mills)	L.F.	4,320		
2582.502	8" Solid Line White - Epoxy (20 mills)	L.F.	75		
2582.502	8" Broken Line - White - Polypreform	L.F.	82		
2582.502	4" Broken Line White Polypreform	L.F.	119		
2582.502	24" Solid Line White - Polypreform	L.F.	124		
2582.503	Zebra X-Walk - Thermoplastic	S.F.	375		
2582.503	Zebra X-Walk - 6' Polypreform	S.F.	630		

MN/DOT STANDARD PLATES	
PLATE NO.	DESCRIPTION
80001	STANDARD BARRICADES

BASIS FOR ESTIMATED QUANTITIES

- 115 LBS. / SQUARE YARDS / INCH OF BITUMINOUS
- .05 GALLONS OF BITUMINOUS TACK COAT / SQUARE YARD OF PAVEMENT / LIFTS

NOTES: 1. * Tear-off Scrap Shingles shall be included in the wearing course mixture at 5% of the total weight of mixture. See Special Provisions.

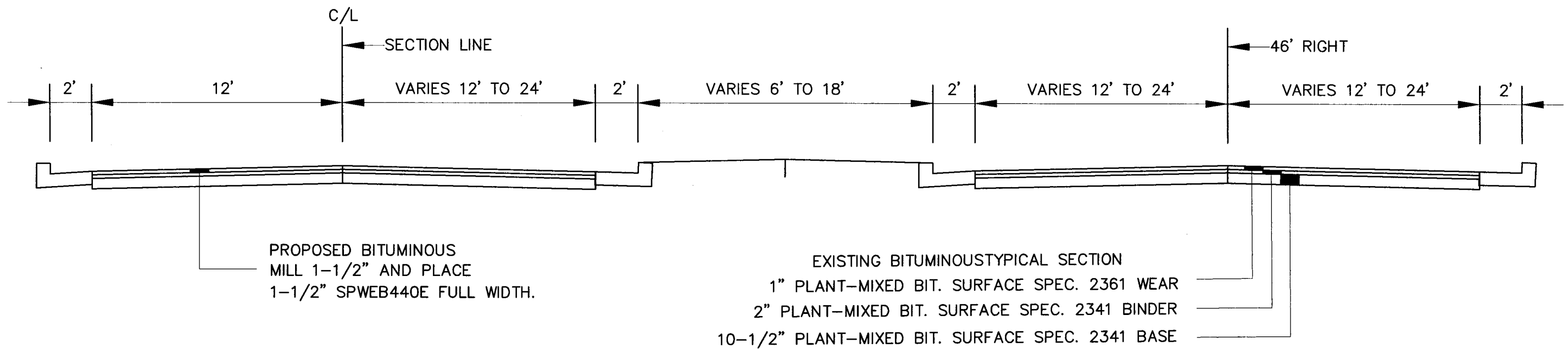
28-262

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

NAME Kathy Jaschke
 MN REG NO. 21864 DATE 6/30/09



TYPICAL SECTION - McKNIGHT
 STA. 0+00 TO STA. 54+24.89



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 LAWS OF THE STATE OF MINNESOTA.

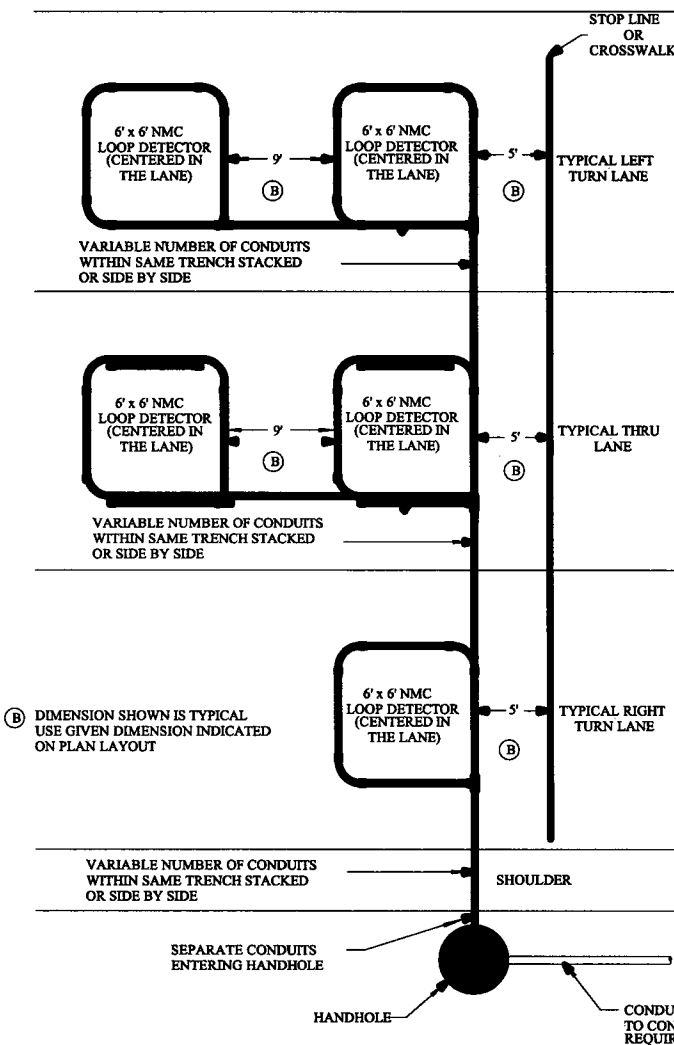
Kathy Jaschke

REG. NO. 21864 DATE 6/30/09

28-262

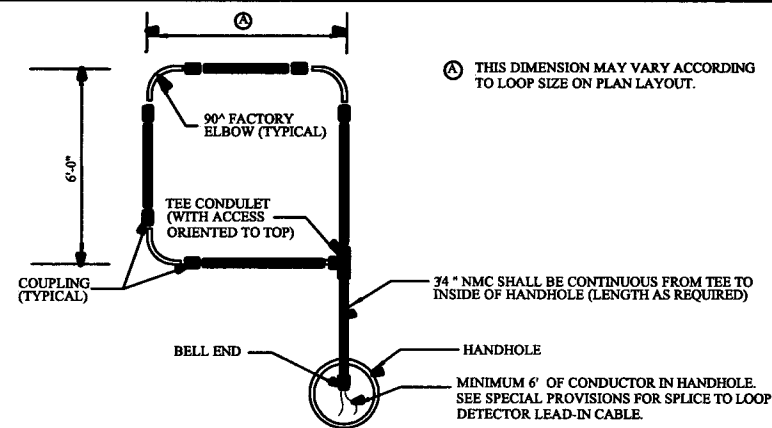
McKNIGHT ROAD (BURNS AVE. TO MINNEHAHA AVE.)

TYPICAL CROSS STREET NMC LOOP DETECTOR LAYOUT



ⓑ DIMENSION SHOWN IS TYPICAL USE GIVEN DIMENSION INDICATED ON PLAN LAYOUT

TYPICAL NMC LOOP DETECTOR DETAIL

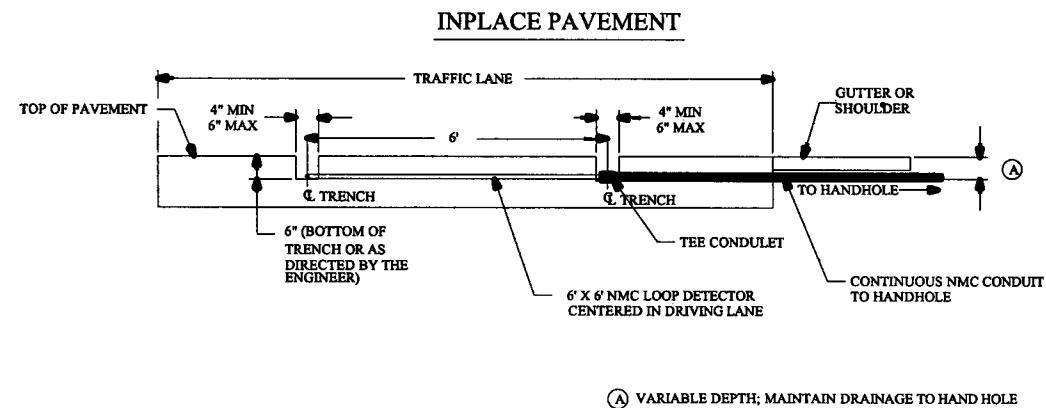


Ⓐ THIS DIMENSION MAY VARY ACCORDING TO LOOP SIZE ON PLAN LAYOUT.

NOTES:

- ROADWAY LOOP DETECTOR CONDUCTORS AND LOOP DETECTOR LEAD IN CABLES SHALL BE IN ACCORDANCE WITH MNDOT SPEC 3815.
- THE 3/4" NON-METALLIC CONDUIT (NMC) AND FITTINGS SHALL BE SCHEDULE 40 HEAVY WALL RIGID POLYVINYL CHLORIDE (PVC), SEE SPEC. 3803.
- THREE CORNERS OF EACH LOOP DETECTOR SHALL BE A 90° FACTORY ELBOW (6" RADIUS), THE FOURTH SHALL BE AN NMC TEE CONDULET.
- APPROVED PVC PRIMER AND CEMENT SHALL BE USED FOR THE PVC JOINTS.
- ALL SLACK MUST BE REMOVED FROM LOOP DETECTOR CONDUCTORS WITHIN THE NMC.
- THE ROADWAY LOOP DETECTOR CONDUCTORS (1/C#14) SHALL BE TWISTED THREE TURNS PER FOOT FROM THE NMC TEE CONDULET TO THE HANDHOLE.
- ATTACH A FERROUS METAL ITEM IN OR ADJACENT TO THE TEE CONDULET COVER OR AS DIRECTED BY THE ENGINEER.
- EACH LOOP DETECTOR CONDUIT TO THE HANDHOLE SHALL BE SLOPED TOWARDS THE HANDHOLE.
- LOOP DETECTOR CONDUITS TO THE HANDHOLE MAY BE PLACED WITHIN THE SAME TRENCH.
- THE LOOP DETECTOR ROADWAY CONDUCTORS SHALL EXTEND 6' TO 10' INTO THE HAND HOLE FOR SPLICING.
- NO SPLICES ALLOWED IN CONDUIT.
- THE LOOP DETECTOR ROADWAY CONDUCTORS AND THE LOOP DETECTOR LEAD-IN CABLE CONDUCTORS SHALL BE PROPERLY PREPARED AND CLEANED BEFORE SPLICING.
- SPLICE KITS SHALL BE 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).
- TYPICAL SIZE OF LOOP DETECTORS ARE 6' x 6' AND 6' x 10'. REFER TO INTERSECTION LAYOUT FOR SPECIFIC LOOP DETECTORS TO BE PLACED.
- ALL LOOP DETECTORS SHALL HAVE 4 TURNS OF CONDUCTORS.
- SEE SPECIAL PROVISIONS FOR APPROVED SPLICE KITS.
- PRIOR TO 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.
- IF BENDING OF THE NMC LOOP LEAD-IN IS REQUIRED, AN APPROPRIATE HEATING BLANKET OR DEVICE APPROVED BY THE ENGINEER SHALL BE USED. EXPOSED FLAME OR TORCHES ARE NOT ALLOWED.

TYPICAL NMC LOOP DETECTOR INSTALLATION



NOTES:

- USE THE LOOP DETECTOR TO BE INSTALLED FOR THE PURPOSE OF MARKING THE PAVEMENT LOCATION FOR THE MILLING OPERATION.
- TO ACHIEVE FULL TRENCH DEPTH FOR CONDUIT PLACEMENT, MILL BEYOND THE DESIRED PAVEMENT MARKING.
- PROVIDE A MINIMUM 5" CLEARANCE, MEASURED FROM THE TOP OF THE FINISHED PAVEMENT TO HIGHEST POINT OF N.M.C. CONDUIT.
- AN AIR COMPRESSOR UNIT (50 HP) IS REQUIRED FOR REMOVING ALL LOOSE MATERIAL FROM TRENCH PRIOR TO TACK COAT APPLICATION.
- 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
- MIXTURE USED TO FILL THE RETROFIT LOOP DETECTOR TRENCHES SHALL MEET THE REQUIREMENTS OF MNDOT SPECIFICATION 2350 OR 2360. AGGREGATE SIZE 3 OR 4 WILL BE ALLOWED WHEN 2350 IS UTILIZED AND AGGREGATE SIZE A OR B WILL BE ALLOWED WHEN 2360 IS UTILIZED. OTHER WEARING COURSE MIXTURE TYPES ARE ALLOWED WHEN APPROVED BY THE ENGINEER.
- THE USE OF PETROLEUM DISTILLATES AS AN ANTI-ADHESIVE AGENT IS NOT ALLOWED. REFER TO MNDOT TECH. MEMO NO. 94-16-MRE-05 DATED 3/10/94 FOR ADDITIONAL INFORMATION.
- 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.
- 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.
- APPLY A BITUMINOUS FOG SEAL ON THE NEWLY COMPACTED MIXTURE TO PROVIDE AN ADDITIONAL SURFACE SEAL (EMULSIFIED ASPHALT 2355.2A). DRY SAND SHALL BE SPREAD ON THE FOG SEAL TO PREVENT MATERIAL PICKUP AND TRACKING.
- WHEN INSTALLING NMC LOOPS INTO PRE-ROADWAY AGGREGATE BASE, DEPTH OF TOP OF CONDUIT TO TOP OF AGGREGATE SHALL NOT EXCEED 2".
- WHEN LOOP DETECTORS ARE MILLED INTO CONCRETE SURFACES, THE TRENCHES SHALL BE FILLED USING A GROUTING MATERIAL WHICH MEETS MNDOT SPEC 2520 OR OTHER MATERIAL AS APPROVED BY THE ENGINEER. BITUMINOUS FILL IS ACCEPTABLE WHEN OVERLAYING CONCRETE TRENCHES.
- MILLING IS REQUIRED FOR ALL NMC LOOP INSTALLATIONS. WHEN LOOPS ARE MILLED INTO EXISTING MILLED SURFACE THAT WILL BE OVERLAPPED WITH BITUMINOUS, THE MINIMUM TRENCH DEPTH SHALL BE NO LESS THAN THE HIGHEST CONDUIT IN THE TRENCH.

PREFORMED NON-METALLIC CONDUIT (NMC) LOOP DETECTOR DETAILS
TRAFFIC CONTROL SIGNAL SYSTEM

28-262

NO.	REV-DATE	BY:	DESCRIPTION
XX	XX-XX-XX	XX	

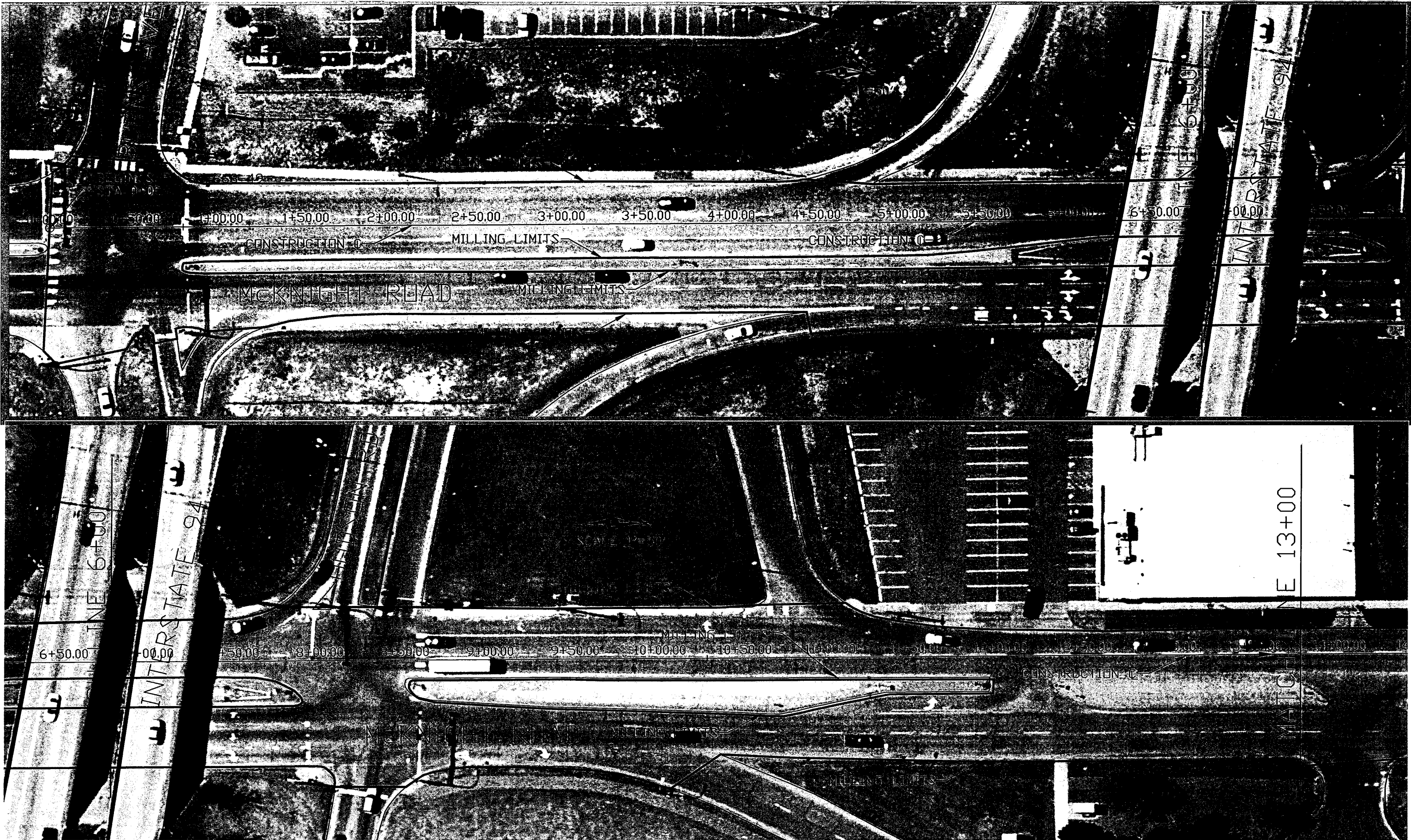
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
SIGNED: *Kathie J. Sankke*
REG NO: 21864 DATE: 6/30/09

MCKNIGHT ROAD
Burns Ave to Minnehaha Ave

County Proj. P3074



NMC LOOP DETAILS
Sheet No. 4 of 13 Sheets



NO.	REV-DATE	BY:	DESCRIPTION

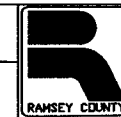
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SIGNED: *Kathy Jarahse*

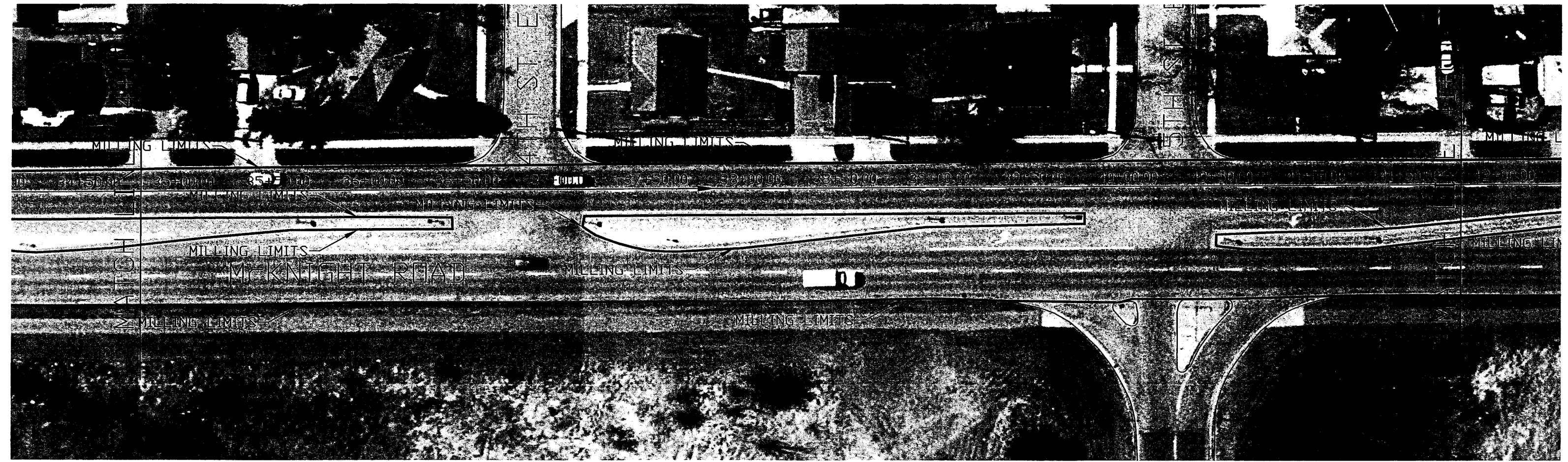
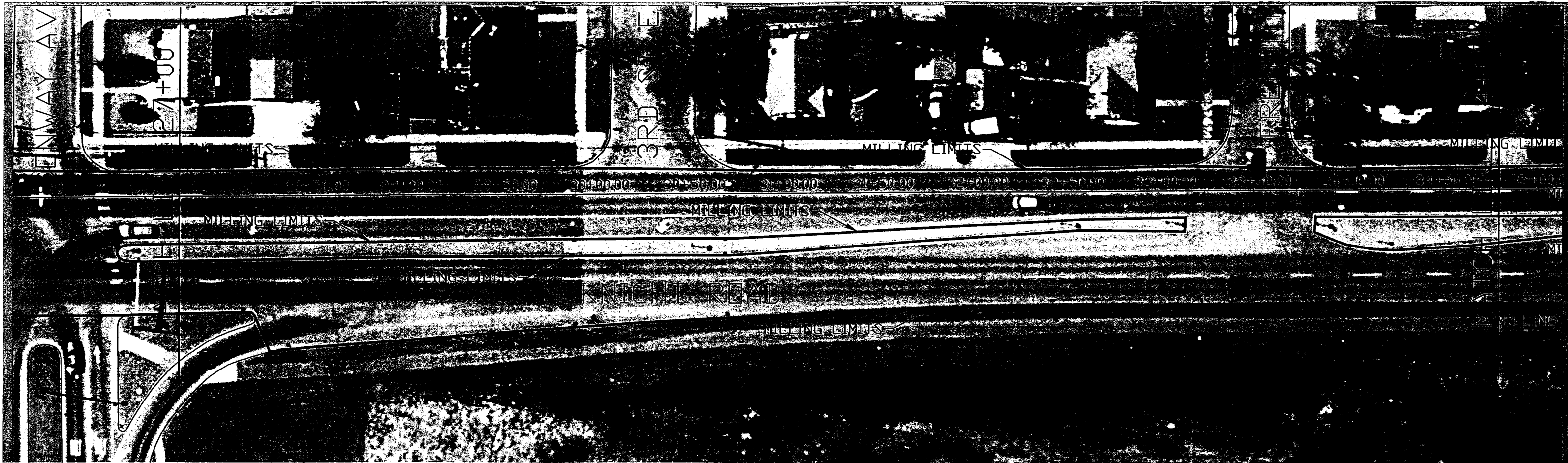
REG NO: *21864* DATE: *6/30/09*

McKNIGHT ROAD
BURNS AVE. TO MINNEHAHA AVE.

County Proj. P-3074



ROADWAY PLAN *28-262*
Sheet No. 5 of 13 Sheets



NO.	REV-DATE	BY:	DESCRIPTION

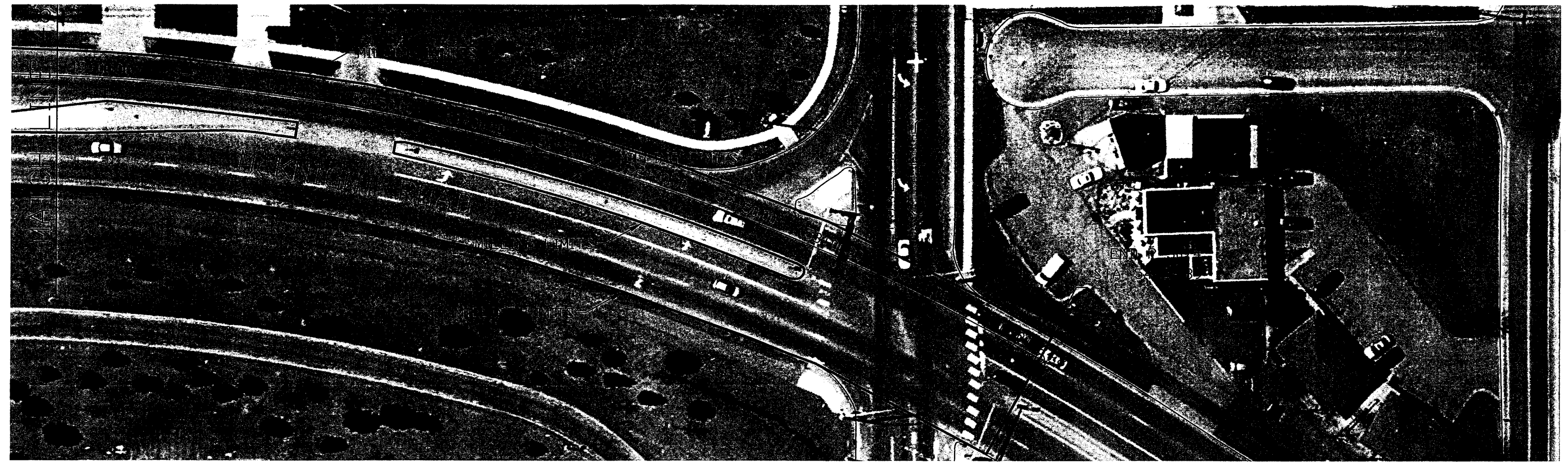
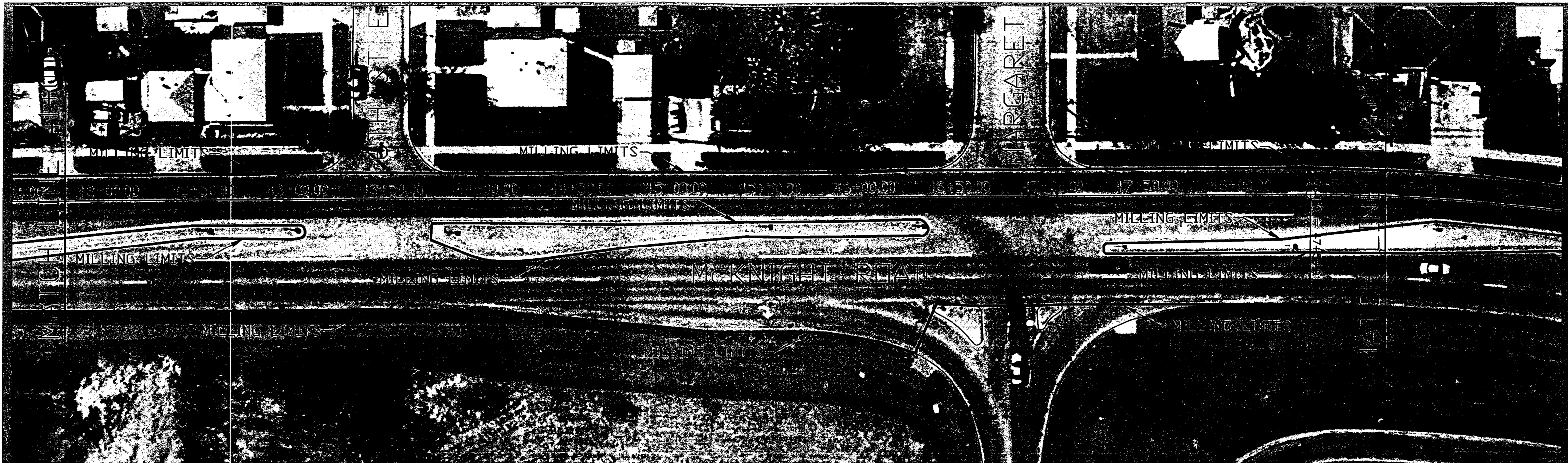
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 SIGNED: *Kathy J. Aschke*
 REG NO: *21864* DATE: *6/30/09*

McKNIGHT ROAD
 BURNS AVE. TO MINNEHAHA AVE.

County Proj. P-3074



ROADWAY PLAN *28-262*
 Sheet No. 7 of 13 Sheets

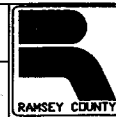


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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 SIGNED: *Kathy Juschke*
 REG NO: *21864* DATE: *6/30/09*

McKNIGHT ROAD
 BURNS AVE. TO MINNEHAHA AVE.

County Proj. P-3074



ROADWAY PLAN *28-262*
 Sheet No. 8 of 13 Sheets

NOTE:

- (1) ALL SIGNAL FACES SHALL BE 12" 3 SECTION R-Y-G, EXCEPT SIGNAL FACES 2-1, 2-4, 6-3 AND 6-4 WHICH SHALL BE 12" 5 SECTION R-Y-G-YLTA-OLTA. ALL SIGNAL FACES SHALL HAVE BACKGROUND SHIELDS EXCEPT SIGNAL FACES 2-4, 4-3, 6-4 AND 6-5.
- (2) THE SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
- (3) A 3/4" HALF COUPLING, 3/4" PIPE NIPPLE AND CONDUIT OUTLET BODY FOR EMERGENCY VEHICLE PRE-EMPTION EQUIPMENT SHALL BE FURNISHED AND INSTALLED APPROXIMATELY 6' FROM THE END OF THE MAST ARM AT POLE 1.
- (4) EACH LUMINAIRE SHALL HAVE A PHOTOELECTRIC CELL AND CHECK SWITCH.
- (5) SEE SHEETS 3, 4, AND 5 FOR SIGN DETAILS.
- (6) SEE SPECIAL PROVISIONS FOR STATE FURNISHED EQUIPMENT.
- (7) ALL ITEMS SHOWN OR NOTED IN PLACE SHALL BE USED UNLESS NOTED OTHERWISE. WORK TO BE DONE THIS SHEET ONLY.
- (8) A MID MAST ARM MOUNT SHALL BE FURNISHED AND INSTALLED 8' FROM THE END OF THE MAST ARM AT POLE 1.
- (9) BLANK.
- (10) SEE SHEET 13 FOR EXISTING LIGHTING SYSTEM.
- (11) SOUTH MEDIAN SALVAGE PEDESTAL POLE 5, SIGNAL FACE 6-3, AND R10-12. REMOVE AND DISPOSE OF PEDESTAL FOUNDATION AND H.H. 4 (SEE SPECIAL PROVISIONS). INSTALL NEW H.H. 4.

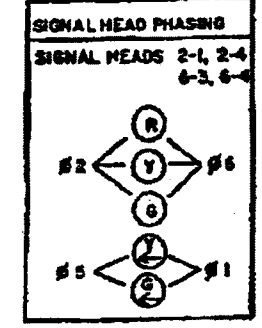
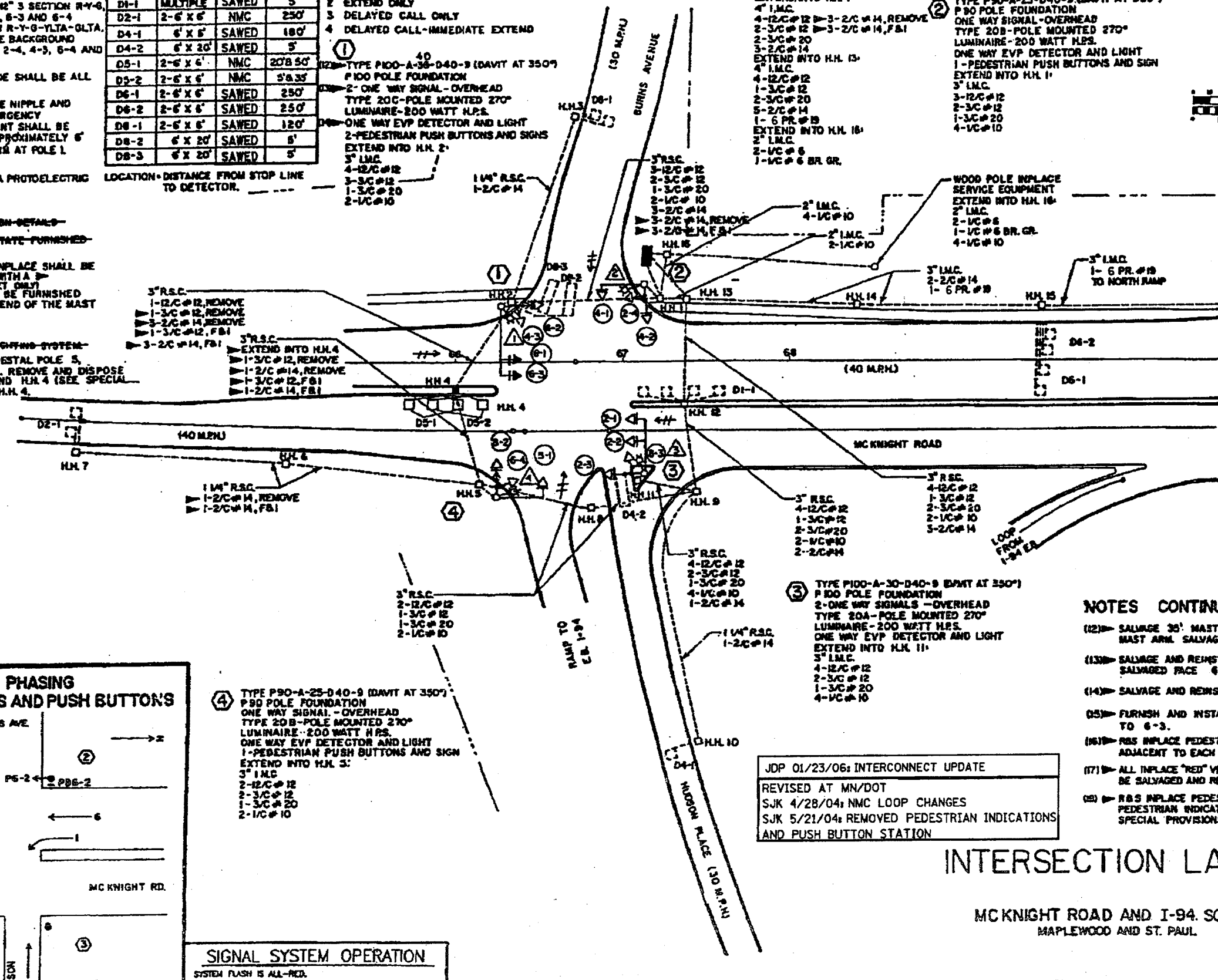
LOOP DETECTORS			
NUMBER	SIZE	TYPE	LOCATION
D1-1	MULTIPLE	SAWED	5'
D2-1	2'-6" X 6"	NMC	250'
D4-1	6' X 6'	SAWED	180'
D4-2	6' X 20'	SAWED	5'
D5-1	2'-6" X 6"	NMC	208 3/4'
D5-2	2'-6" X 6"	NMC	5' @ 35'
D6-1	2'-6" X 6"	SAWED	250'
D6-2	2'-6" X 6"	SAWED	250'
D8-1	2'-6" X 6"	SAWED	120'
D8-2	6' X 20'	SAWED	6'
D8-3	6' X 20'	SAWED	5'

LOOP DETECTOR FUNCTIONS

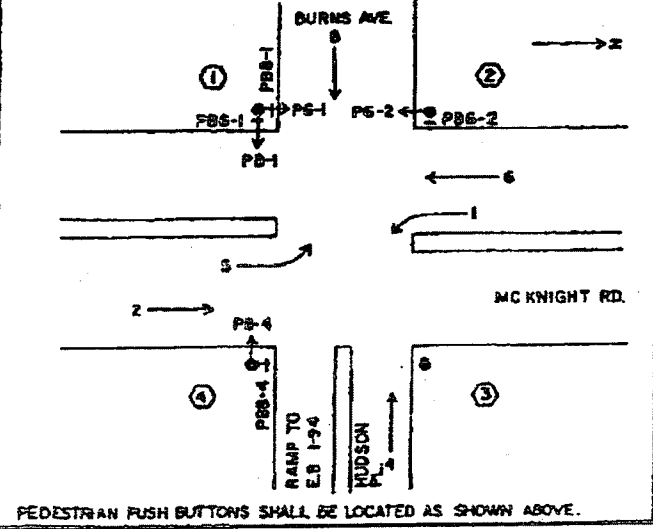
- 1 CALL AND EXTEND
- 2 EXTEND ONLY
- 3 DELAYED CALL ONLY
- 4 DELAYED CALL-IMMEDIATE EXTEND

CONTROLLER AND CABINET, R.B.S. CONTROLLER AND CABINET, FURNISHED BY MNDOT, INSTALLED BY CONTRACTOR

- 1 TYPE P90-A-25-D40-9 (DAVIT AT 350') P 90 POLE FOUNDATION ONE WAY SIGNAL- OVERHEAD TYPE 20B-POLE MOUNTED 270° LUMINAIRE- 200 WATT H.P.S. ONE WAY EVP DETECTOR AND LIGHT 1-PEDESTRIAN PUSH BUTTONS AND SIGN EXTEND INTO H.H. 1: 3" L.M.C. 4-12/C#12 1-3/C#12 2-3/C#14, F.B.I 3-2/C#14
- 2 TYPE P90-A-25-D40-9 (DAVIT AT 350') P 90 POLE FOUNDATION ONE WAY SIGNAL- OVERHEAD TYPE 20B-POLE MOUNTED 270° LUMINAIRE- 200 WATT H.P.S. ONE WAY EVP DETECTOR AND LIGHT 1-PEDESTRIAN PUSH BUTTONS AND SIGN EXTEND INTO H.H. 1: 3" L.M.C. 4-12/C#12 1-3/C#12 2-3/C#14, F.B.I 3-2/C#14
- 3 TYPE P100-A-30-D40-9 (DAVIT AT 350') P 100 POLE FOUNDATION 2- ONE WAY SIGNALS -OVERHEAD TYPE 20A-POLE MOUNTED 270° LUMINAIRE- 200 WATT H.P.S. ONE WAY EVP DETECTOR AND LIGHT EXTEND INTO H.H. 11: 3" L.M.C. 4-12/C#12 1-3/C#12 2-3/C#14, F.B.I 2-1/C#10
- 4 TYPE P90-A-25-D40-9 (DAVIT AT 350') P 90 POLE FOUNDATION ONE WAY SIGNAL- OVERHEAD TYPE 20B-POLE MOUNTED 270° LUMINAIRE- 200 WATT H.P.S. ONE WAY EVP DETECTOR AND LIGHT EXTEND INTO H.H. 5: 3" L.M.C. 2-12/C#12 2-3/C#12 1-3/C#20 2-1/C#10



CONTROLLER PHASING PEDESTRIAN INDICATIONS AND PUSH BUTTONS



- 4 TYPE P90-A-25-D40-9 (DAVIT AT 350') P 90 POLE FOUNDATION ONE WAY SIGNAL- OVERHEAD TYPE 20B-POLE MOUNTED 270° LUMINAIRE- 200 WATT H.P.S. ONE WAY EVP DETECTOR AND LIGHT 1-PEDESTRIAN PUSH BUTTONS AND SIGN EXTEND INTO H.H. 5: 3" L.M.C. 2-12/C#12 2-3/C#12 1-3/C#20 2-1/C#10

JDP 01/23/06: INTERCONNECT UPDATE
 REVISED AT MN/DOT
 SUK 4/28/04: NMC LOOP CHANGES
 SUK 5/21/04: REMOVED PEDESTRIAN INDICATIONS AND PUSH BUTTON STATION

NOTES CONTINUED:

- (12) SALVAGE 35' MAST ARM, FURNISH AND INSTALL 40' MAST ARM SALVAGE AND REINSTALL MAST ARM SIGNS.
- (13) SALVAGE AND REINSTALL SIGNAL FACE 6-1. INSTALL SALVAGED FACE 6-5.
- (14) SALVAGE AND REINSTALL.
- (15) FURNISH AND INSTALL R10-12 SIGN (36"x48") ADJACENT TO 6-3.
- (16) R.B.S INPLACE PEDESTRIAN SIGNS, F.B.I SIGNS R10-4B ADJACENT TO EACH PUSH BUTTON.
- (17) ALL INPLACE "RED" VEHICLE SIGNAL INDICATIONS SHALL BE SALVAGED AND REPLACED WITH LED UNITS.
- (18) R.B.S INPLACE PEDESTRIAN INDICATIONS, F.B.I 12" X 12" PEDESTRIAN INDICATIONS WITH SYMBOL LEGENDS (SEE SPECIAL PROVISIONS).

INTERSECTION LAYOUT

MCKNIGHT ROAD AND I-94 SOUTH RAMP
MAPLEWOOD AND ST. PAUL

SIGNAL SYSTEM OPERATION

SYSTEM FLASH IS ALL-RED. NORMAL OPERATION IS 5-PHASE WITH PHASES 1 AND 5 PROTECTED/PERMISSIVE LEFT TURNS.

REVISIONS CERTIFIED BY *[Signature]* 15400 3/27/06 S.P. 6283-160
 PROFESSIONAL ENGINEER REG. NO. DATE

SYSTEM I.D. 21342 METER ADDRESS: 251 MCKNIGHT RD. N. Sheet No. 3 of 10 Sheets
 Cabinet Serial Cabinet 04-09-7008 351

NO.	REV-DATE	BY:	DESCRIPTION

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.
 SIGNED: *[Signature]*
 REG NO: 21864 DATE: 6/30/09

MCKNIGHT ROAD
 BURNS AVE. TO MINNEHAHA AVE.

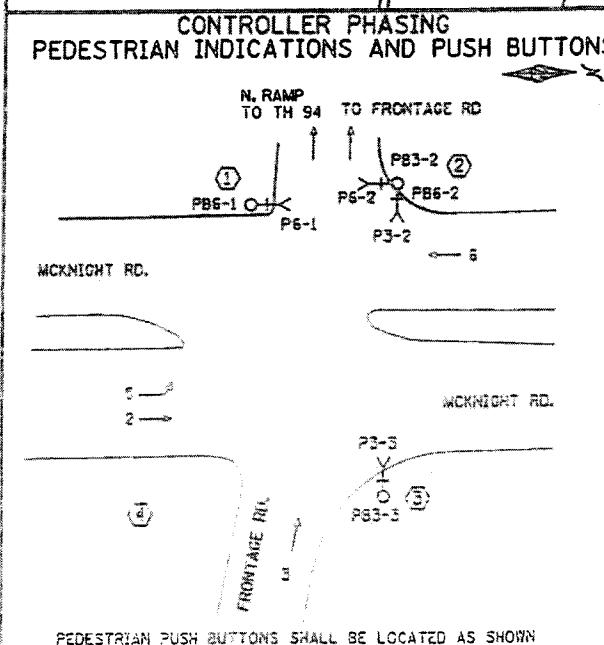
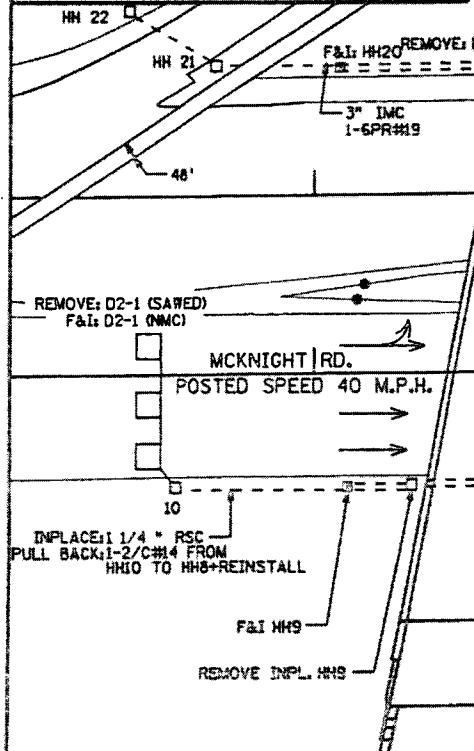
County Proj. P-3074

FOR INFORMATION ONLY 28-262
 Sheet No. 9 of 13 Sheets

T21341LW.dgn
 FILENAME: S:\TRAFFIC\Signal Design\p106\TH 94\21341\T21341LW.dgn
 PLOTTED: 23-JAN-2006 10:23

LOOP DETECTORS				
NUMBER	SIZE (FEET)	LOCATION	STATUS	TYPE
D2-1	3-6X6	250'	F&I	NMC
D3-1	2-6X6	180'	INPL.	SAWED
D3-2	2-6X6	10' & 40'	INPL.	NMC
D3-3	2-6X6	10' & 40'	INPL.	NMC
D4-1	6X6	120'	REMOVE	SAWED
D4-2	6X20	5'	REMOVE	SAWED
D5-1	2-6X6	5' & 20'	INPL.	NMC
D5-2	6X20	-20	ABANDON	SAWED
D6-1	3-6X6	150	F&I	NMC

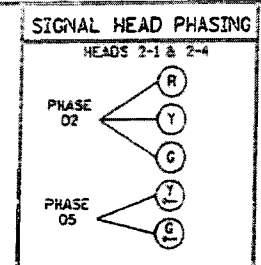
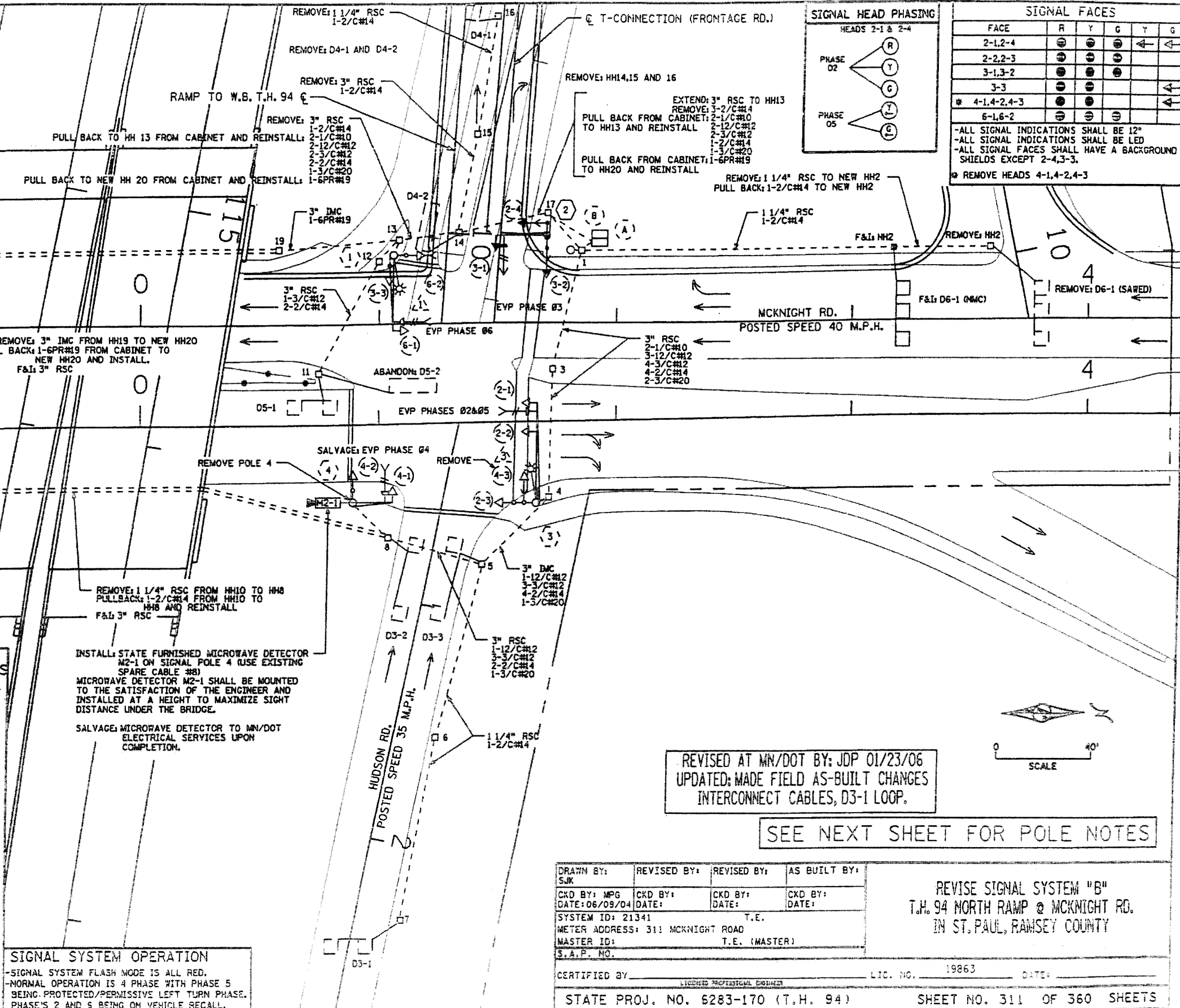
-LOCATION DISTANCE FROM CROSSWALK/STOP BAR IN FEET.
 -ALL LOOP DETECTORS SHALL BE NMC UNLESS NOTED OTHERWISE.



SIGNAL SYSTEM OPERATION

-SIGNAL SYSTEM FLASH MODE IS ALL RED.
 -NORMAL OPERATION IS 4 PHASE WITH PHASE 5 BEING PROTECTED/PERMISSIVE LEFT TURN PHASE.
 PHASES 2 AND 5 BEING ON VEHICLE RECALL.

INSTALL STATE FURNISHED MICROWAVE DETECTOR M2-1 ON SIGNAL POLE 4 (USE EXISTING SPARE CABLE #8)
 MICROWAVE DETECTOR M2-1 SHALL BE MOUNTED TO THE SATISFACTION OF THE ENGINEER AND INSTALLED AT A HEIGHT TO MAXIMIZE SIGHT DISTANCE UNDER THE BRIDGE.
 SALVAGE MICROWAVE DETECTOR TO MN/DOT ELECTRICAL SERVICES UPON COMPLETION.



SIGNAL FACES					
FACE	R	Y	G	T	G
2-1,2-4	●	●	●	←	←
2-2,2-3	●	●	●	←	←
3-1,3-2	●	●	●	←	←
3-3	●	●	●	←	←
4-1,4-2,4-3	●	●	●	←	←
6-1,6-2	●	●	●	←	←

-ALL SIGNAL INDICATIONS SHALL BE 12"
 -ALL SIGNAL INDICATIONS SHALL BE LED
 -ALL SIGNAL FACES SHALL HAVE A BACKGROUND SHIELDS EXCEPT 2-4,3-3.
 * REMOVE HEADS 4-1,4-2,4-3

REVISED AT MN/DOT BY: JDP 01/23/06
 UPDATED: MADE FIELD AS-BUILT CHANGES
 INTERCONNECT CABLES, D3-1 LOOP.

SEE NEXT SHEET FOR POLE NOTES

DRAWN BY: SJK	REVISED BY:	REVISED BY:	AS BUILT BY:
CKD BY: MPG	CKD BY:	CKD BY:	CKD BY:
DATE: 06/09/04	DATE:	DATE:	DATE:
SYSTEM ID: 21341	T.E.		
METER ADDRESS: 311 MCKNIGHT ROAD	T.E. (MASTER)		
MASTER ID:	T.E. (MASTER)		
S.A.P. NO.			

REVISE SIGNAL SYSTEM "B"
 T.H. 94 NORTH RAMP @ MCKNIGHT RD.
 IN ST. PAUL, RAMSEY COUNTY

CERTIFIED BY: _____ LIC. NO. 19863 DATE: _____
 STATE PROJ. NO. 6283-170 (T.H. 94) SHEET NO. 311 OF 360 SHEETS

Copied from Cabinet 04-09-2008 326

NO.	REV-DATE	BY:	DESCRIPTION

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.
 SIGNED: Kathy Sawchenko
 REG NO: 21864 DATE: 6/30/09

MCKNIGHT ROAD
 BURNS AVE. TO MINNEHAHA AVE.

County Proj. P-3074

FOR INFORMATION ONLY 28-262
 Sheet No. 10 of 13 Sheets

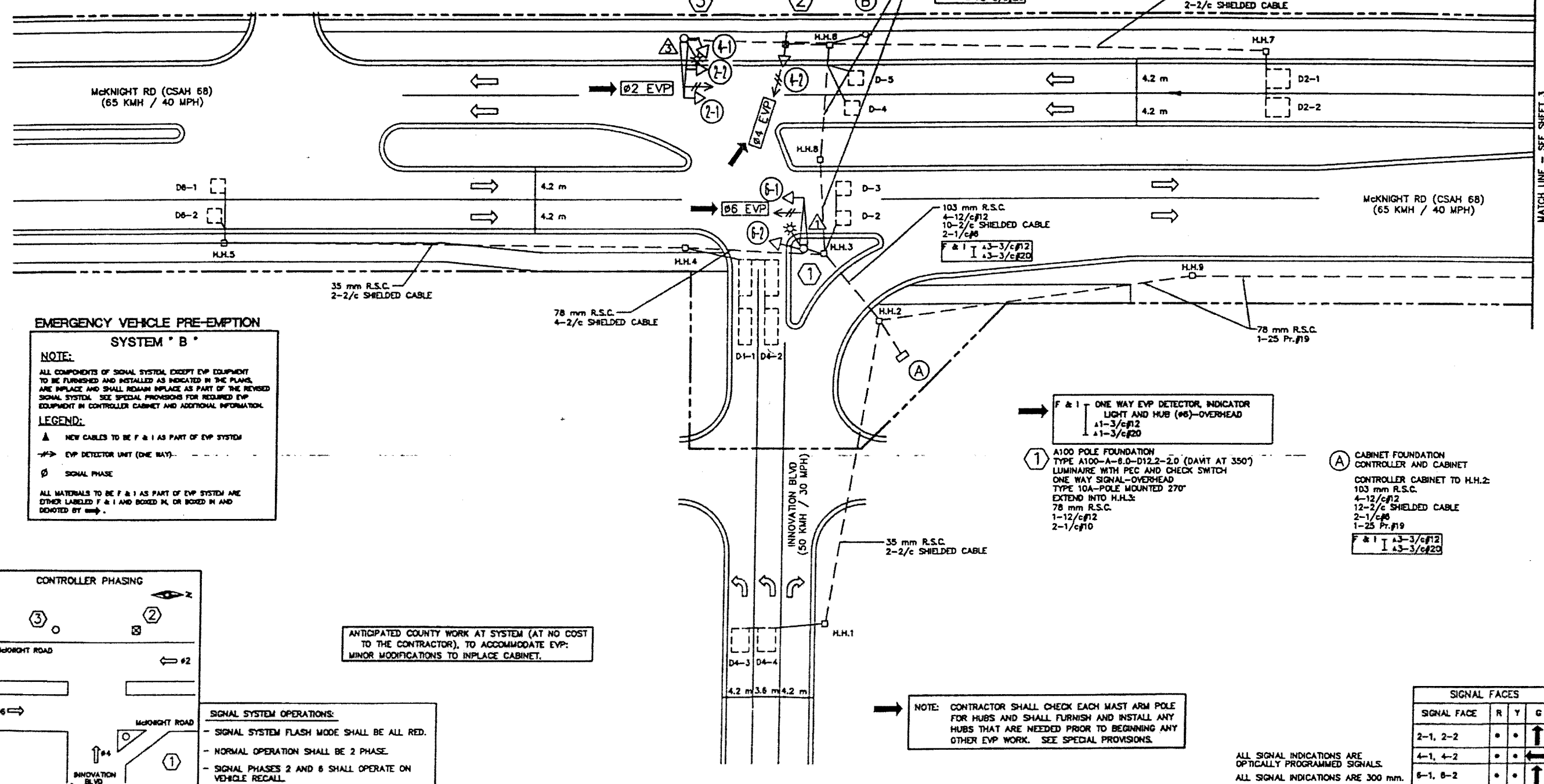
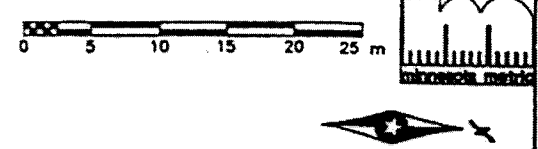
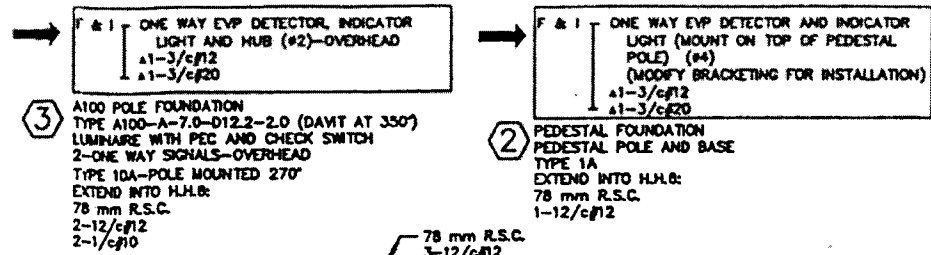
NOTES:

- 1) DETECTORS D-2, D-3, D-4 AND D-5 ARE FOR COUNTING PURPOSES ONLY.
- 2) ALL HANDHOLES ARE CONCRETE HANDHOLES WITH TYPE "C" COVERS.

CONTRACTOR SHALL FURNISH & INSTALL THE FOLLOWING MATERIALS ON MAST ARMS 1 AND 3:
 ONE WAY EVP DETECTOR, INDICATOR LIGHT AND HUB AT APPROX. 1.2 METERS (4') FROM THE LEFT END OF THE MAST ARM.

CONTRACTOR SHALL FURNISH & INSTALL THE FOLLOWING MATERIALS ON PEDESTAL POLE 2:
 ONE WAY EVP DETECTOR AND INDICATOR LIGHT, ABOVE SIGNAL FACE 4-2 (MODIFY BRACKETING AS NEEDED).

NUMBER	SIZE (m.)
D2-1	2.4x3.0
D2-2	2.4x3.0
D4-1	2-1.7x4.8
D4-2	2-1.7x4.8
D4-3	2.4x3.0
D4-4	2.4x3.0
D6-1	1.7x1.7
D6-2	1.7x1.7
D-2	1.7x1.7
D-3	1.7x1.7
D-4	1.7x1.7
D-5	1.7x1.7

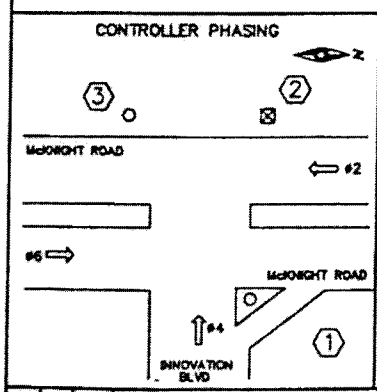


EMERGENCY VEHICLE PRE-EMPTION SYSTEM "B"

NOTE:
 ALL COMPONENTS OF SIGNAL SYSTEM EXCEPT EVP EQUIPMENT TO BE FURNISHED AND INSTALLED AS INDICATED IN THE PLANS. ARE IN PLACE AND SHALL REMAIN IN PLACE AS PART OF THE REVISED SIGNAL SYSTEM. SEE SPECIAL PROVISIONS FOR REQUIRED EVP EQUIPMENT IN CONTROLLER CABINET AND ADDITIONAL INFORMATION.

LEGEND:
 ▲ NEW CABLES TO BE F & I AS PART OF EVP SYSTEM
 → EVP DETECTOR UNIT (ONE WAY)
 ∅ SIGNAL PHASE

ALL MATERIALS TO BE F & I AS PART OF EVP SYSTEM ARE EITHER LABELED F & I AND BOXED IN, OR BOXED IN AND DENOTED BY →.



SIGNAL SYSTEM OPERATIONS:

- SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
- NORMAL OPERATION SHALL BE 2 PHASE.
- SIGNAL PHASES 2 AND 6 SHALL OPERATE ON VEHICLE RECALL.

ANTICIPATED COUNTY WORK AT SYSTEM (AT NO COST TO THE CONTRACTOR), TO ACCOMMODATE EVP: MINOR MODIFICATIONS TO INPLACE CABINET.

NOTE: CONTRACTOR SHALL CHECK EACH MAST ARM POLE FOR HUBS AND SHALL FURNISH AND INSTALL ANY HUBS THAT ARE NEEDED PRIOR TO BEGINNING ANY OTHER EVP WORK. SEE SPECIAL PROVISIONS.

SIGNAL FACES			
SIGNAL FACE	R	Y	G
2-1, 2-2	•	•	↑
4-1, 4-2	•	•	←
6-1, 6-2	•	•	↑

ALL SIGNAL INDICATIONS ARE OPTICALLY PROGRAMMED SIGNALS.
 ALL SIGNAL INDICATIONS ARE 300 mm.

NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

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.

Kathy Janecke
 Date: 10/26/98 Reg. No. 22457

ESEH

MAPLEWOOD, MINNESOTA
 RAMSEY COUNTY
 STATE AID PROJECT NO. 138-020-26
 CITY PROJECT NO. 98-09

EVP SYSTEM "B" INTERSECTION LAYOUT
 McKNIGHT ROAD (CSAH 68) AT INNOVATION BLVD

FILE NO. MAPLE9801
 DATE 10/28/98

531

NO.	REV-DATE	BY:	DESCRIPTION

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.

SIGNED: *Kathy Janecke*
 REG NO: 21864 DATE: 6/30/09

McKNIGHT ROAD
 BURNS AVE. TO MINNEHAHA AVE.

County Proj. P-3074



FOR INFORMATION ONLY 28-262
 Sheet No. 11 of 13 Sheets

- NOTES:**
- 1) SIGNAL FACES B-4, B-5 AND B-6 HAVE BACKGROUND SHIELDS.
 - 2) DETECTORS D-1 AND D-2 ARE FOR COUNTING PURPOSES ONLY.
 - 3) SPARE 12/c#12 CABLE TO SIGNAL BASE 2 IS WIRED TO A TERMINAL BLOCK IN HANDHOLE 1.
 - 4) ALL PEDESTRIAN INDICATIONS ARE 300 mm x 300 mm.
 - 5) ALL HANDHOLES ARE CONCRETE HANDHOLES WITH TYPE "C" COVERS.

CONTRACTOR SHALL FURNISH & INSTALL THE FOLLOWING MATERIALS ON MAST ARMS 1, 2 AND 3:
ONE WAY EVP DETECTOR, INDICATOR LIGHT AND HUB AT APPROX. 1.2 METERS (4') FROM THE LEFT END OF THE MAST ARM.

CONTRACTOR SHALL FURNISH & INSTALL THE FOLLOWING MATERIALS ON PEDESTAL POLE 5:
ONE WAY EVP DETECTOR AND INDICATOR LIGHT, ABOVE SIGNAL FACE B-5 (MODIFY BRACKETING AS NEEDED).

NOTE: CONTRACTOR SHALL CHECK EACH MAST ARM POLE FOR HUBS AND SHALL FURNISH AND INSTALL ANY HUBS THAT ARE NEEDED PRIOR TO BEGINNING ANY OTHER EVP WORK. SEE SPECIAL PROVISIONS.

LOOP DETECTORS

NUMBER	SIZE (m.)
D1-1	2.4x13.2
D2-1	1.7x1.7
D2-2	1.7x1.7
D4-1	2.4x13.7
D4-2	2.4x13.7
D4-3	2.4x3.0
D4-4	2.4x3.0
D5-1	2.4x13.2
D6-1	2.4x3.0
D6-2	2.4x3.0
D8-1	1.7x1.7
D8-2	1.7x1.7
D-1	2.4x3.0
D-2	3.0x3.0

F & I ONE WAY EVP DETECTOR, INDICATOR LIGHT AND HUB (#2.5)-OVERHEAD
A1-3/c#12
A1-3/c#20

A100 POLE FOUNDATION
TYPE A100-A-10.0-D12.2-2.0 (DAWT AT 350')
LUMINAIRE WITH PEC AND CHECK SWITCH
3-ONE WAY SIGNALS-OVERHEAD
TYPE 30A-POLE MOUNTED 180'
TYPE 10B-POLE MOUNTED 270'
TYPE "D" SIGN PANEL-OVERHEAD
R10-10 SIGN PANEL-OVERHEAD
EXTEND INTO H.H.10:
78 mm R.S.C.
2-12/c#12
2-1/c#10

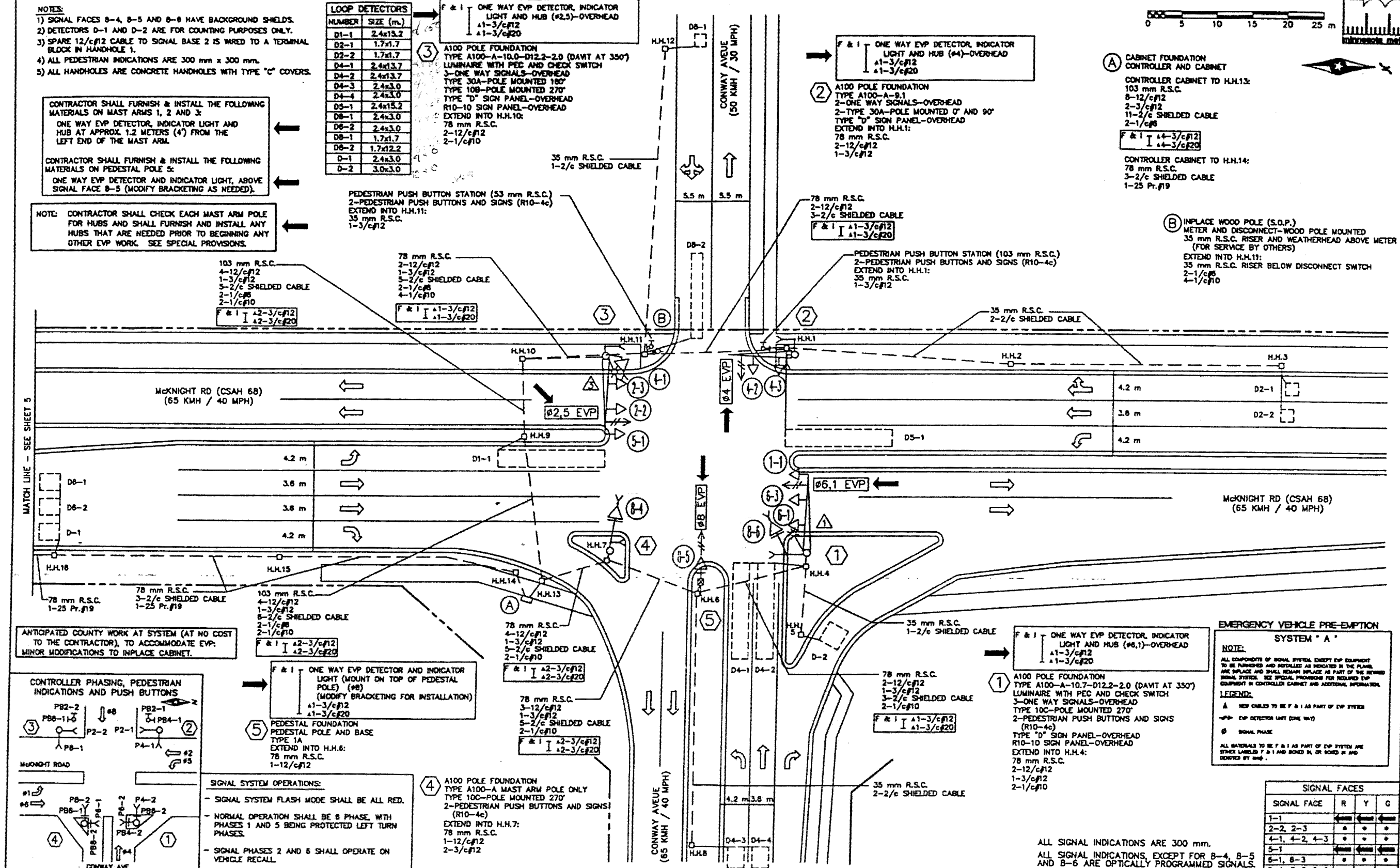
PEDESTRIAN PUSH BUTTON STATION (53 mm R.S.C.)
2-PEDESTRIAN PUSH BUTTONS AND SIGNS (R10-4c)
EXTEND INTO H.H.11:
35 mm R.S.C.
1-3/c#12

F & I ONE WAY EVP DETECTOR, INDICATOR LIGHT AND HUB (#4)-OVERHEAD
A1-3/c#12
A1-3/c#20

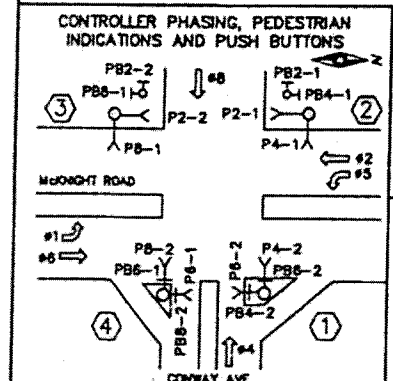
A100 POLE FOUNDATION
TYPE A100-A-8.1
2-ONE WAY SIGNALS-OVERHEAD
2-TYPE 30A-POLE MOUNTED 0° AND 90°
TYPE "D" SIGN PANEL-OVERHEAD
EXTEND INTO H.H.1:
78 mm R.S.C.
2-12/c#12
1-3/c#12

(A) CABINET FOUNDATION
CONTROLLER CABINET
103 mm R.S.C.
8-12/c#12
2-3/c#12
11-2/c#12 SHIELDED CABLE
2-1/c#6

(B) INPLACE WOOD POLE (S.O.P.)
METER AND DISCONNECT-WOOD POLE MOUNTED
35 mm R.S.C. RISER AND WEATHERHEAD ABOVE METER
(FOR SERVICE BY OTHERS)
EXTEND INTO H.H.11:
35 mm R.S.C. RISER BELOW DISCONNECT SWITCH
2-1/c#6
4-1/c#10



ANTICIPATED COUNTY WORK AT SYSTEM (AT NO COST TO THE CONTRACTOR), TO ACCOMMODATE EVP: MINOR MODIFICATIONS TO INPLACE CABINET.



SIGNAL SYSTEM OPERATIONS:

- SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
- NORMAL OPERATION SHALL BE 6 PHASE, WITH PHASES 1 AND 5 BEING PROTECTED LEFT TURN PHASES.
- SIGNAL PHASES 2 AND 6 SHALL OPERATE ON VEHICLE RECALL.

(4) A100 POLE FOUNDATION
TYPE A100-A MAST ARM POLE ONLY
TYPE 10C-POLE MOUNTED 270'
2-PEDESTRIAN PUSH BUTTONS AND SIGNS (R10-4c)
EXTEND INTO H.H.7:
78 mm R.S.C.
1-12/c#12
2-3/c#12

F & I ONE WAY EVP DETECTOR, INDICATOR LIGHT AND HUB (#6.1)-OVERHEAD
A1-3/c#12
A1-3/c#20

A100 POLE FOUNDATION
TYPE A100-A-10.7-D12.2-2.0 (DAWT AT 350')
LUMINAIRE WITH PEC AND CHECK SWITCH
3-ONE WAY SIGNALS-OVERHEAD
TYPE 10C-POLE MOUNTED 270'
2-PEDESTRIAN PUSH BUTTONS AND SIGNS (R10-4c)
TYPE "D" SIGN PANEL-OVERHEAD
R10-10 SIGN PANEL-OVERHEAD
EXTEND INTO H.H.4:
78 mm R.S.C.
2-12/c#12
1-3/c#12
2-1/c#10

EMERGENCY VEHICLE PRE-EMPTION SYSTEM "A"

NOTE:
ALL COMPONENTS OF SIGNAL SYSTEM EXCEPT EVP EQUIPMENT TO BE FURNISHED AND INSTALLED AS INDICATED IN THE PLAN. THE INPLACE AND SHALL REMAIN IN PLACE AS PART OF THE SIGNAL SYSTEM. SEE SPECIAL PROVISIONS FOR REQUIRED EVP EQUIPMENT BY CONTROLLED CABINET AND ADDITIONAL INFORMATION.

LEGEND:
A NEW CABLE TO BE F & I AS PART OF EVP SYSTEM
-> EVP DETECTOR UNIT (ONE WAY)
B SIGNAL PHASE
ALL MATERIALS TO BE F & I AS PART OF EVP SYSTEM ARE OTHER LABELS F & I AND BOKED IN, OR BOKED IN AND IDENTIFIED BY #.

SIGNAL FACES

SIGNAL FACE	R	Y	G
1-1	←	←	←
2-2, 2-3	•	•	•
4-1, 4-2, 4-3	•	•	•
5-1	←	←	←
6-1, 6-3	•	•	•
B-4, B-5, B-6	•	•	•

ALL SIGNAL INDICATIONS ARE 300 mm.
ALL SIGNAL INDICATIONS, EXCEPT FOR B-4, B-5 AND B-6 ARE OPTICALLY PROGRAMMED SIGNALS.

NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

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.
Date: 10/16/08 Reg. No. 22457

ES&H

MAPLEWOOD, MINNESOTA
RAMSEY COUNTY
S.A.P. 138-020-28, 138-101-13
CITY PROJECT NO. 98-09

EVP SYSTEM "A"
INTERSECTION LAYOUT
McKNIGHT ROAD (CSAH 68) AT CONWAY AVENUE

FILE NO. MAPLESB01
DATE 10/16/08

3
6