

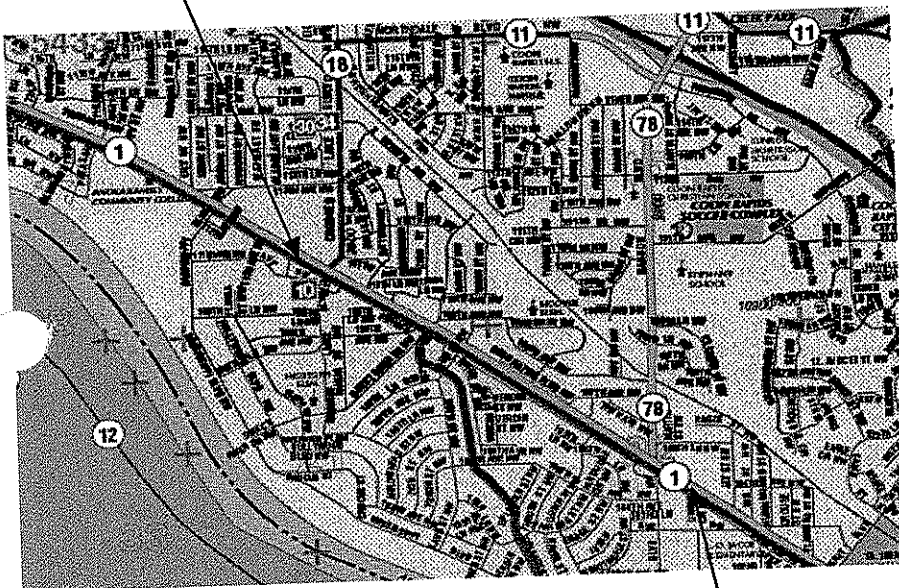
# ANOKA COUNTY HIGHWAY DEPARTMENT

CONSTRUCTION PLAN FOR:  
BIT. MILL, BIT. OVERLAY,  
STORM SEWER REPAIR, CURB  
REPLACEMENT

CSAH NO: 1  
 FROM 700' S.E. OF HANSON BLVD  
 TO 400' N.W. OF CROOKED LK BLVD

COUNTY PROJECT NO: 07-17-01  
 GROSS LENGTH 8000 FT 1.5 MI  
 BRIDGES LENGTH 0 FT 0 MI  
 EXCEPTION LENGTH 0 FT 0 MI  
 NET LENGTH 8000 FT 1.5 MI

END PROJECT C.P. 07-17-01 STATION 90+00



PAGE	SHEETS
1	TITLE
2	SEQ
3	STORM SEWER REPAIR
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5	TYPICAL SECTIONS
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8	PAVEMENT MARKINGS
9 - 10	SIGNAL LOOP DETAILS
11-16	EXISTING LOOP LAYOUTS

BEGIN PROJECT C.P. 07-17-01 STATION 10+00

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

*Andrew J. Witter*  
 ANDREW J. WITTER, P.E.

LIC. NO. 42757 DATE 5/11/07

**GOVERNING SPECIFICATIONS:**

THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION SHALL GOVERN. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MMUTCD, INCLUDING "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE YOUTS - JANUARY 2007."

APPROVED 5/15, 2007

*Robert D. Hill*  
 ANOKA COUNTY ENGINEER

SHEET 1 OF 16 SHEETS

COUNTY PROJECT 07-17-01

# STATEMENT OF ESTIMATED QUANTITIES

TAB NO.	ITEM NO.	ITEM	NOTE NO.	UNIT	TOTAL EST. QUANT.
	2021.501	MOBILIZATION			
A	2104.501	REMOVE CONCRETE CURB AND GUTTER		LUMP SUM	1
A	2104.505	REMOVE CONCRETE PAVEMENT	1	LIN FT	700
A	2104.505	REMOVE BITUMINOUS PAVEMENT	3	SQ YD	13
A	2104.511	SAWING CONCRETE PAVEMENT	1	SQ YD	293
A	2104.513	SAWING BITUMINOUS PAVEMENT	3	LIN FT	186
	2221.501	AGGREGATE CLASS 7B-C	1	LIN FT	924
	2232.501	MILL BITUMINOUS SURFACE (1.5") MAINLINE AND ST. APPROACHES	4	(CV)TONS	30
A	2301.502	8" CONCRETE PAVEMENT	14	SQ YD	71257
	2357.502	BITUMINOUS MATERIAL FOR TACK COAT	3	SQ YD	13
	2360.609	TYPE MV3 WEAR COURSE MIXTURE ( MVWE35035 E ) MAINLINE / ST. APP.	10	GALLON	3563
A	2360.609	TYPE LV3 WEAR COURSE MIX FOR PATCH CB'S / ISLAND( LVWE35030 E )	6	TON	6146
C	2504.602	ADJUST GATE VALVE AND BOX	1	TON	79
A	2506.503	RECONSTRUCT DRAINAGE STRUCTURE		EACH	1
A,B	2506.516	CASTING ASSEMBLY	1, 13	LIN FT	38
C	2506.522	ADJUST FRAME RING AND CASTING	1	EACH	35
A	2506.602	GROUT CATCH BASIN OR MAN HOLE		EACH	1
A	2531.501	CONCRETE CURB AND GUTTER DESIGN B618	1	EACH	16
	2563.601	TRAFFIC CONTROL	1	LIN FT	700
	2563.602	PORTABLE CHANGEABLE MESSAGE SIGN		LUMP SUM	1
	2564.602	PAVEMENT MESSAGE (LT / RT ARROW) HOT TAPE		UNIT DAY	20
	2564.602	PAVEMENT MESSAGE ( HOV DIAMOND ) HOT TAPE	9	EACH	24
	2564.603	4" BROKEN LINE WHITE - TEMPORARY PAINT	5	EACH	6
	2564.603	4" SOLID LINE WHITE - EPOXY	12	LIN FT	3200
	2564.603	4" BROKEN LINE WHITE - EPOXY		LIN FT	24700
	2564.603	4" SOLID LINE YELLOW - EPOXY		LIN FT	3200
	2564.603	24" SOLID LINE WHITE - HOT TAPE		LIN FT	16000
	2564.618	3 X 6 ZEBRA CROSSWALK - HOT TAPE	12	LIN FT	544
	2565.602	LOOP DETECTOR 8"X6"	12	SQ FT	3402
A	2575.604	EROSION CONTROL BLANKET	7, 8	EACH	42
	2580.523	4" BROKEN LINE REMOVABLE LANE TAPE	2	SQ YD	307
			11	LIN FT	1280

## BASIS OF PLANNED QUANTITIES

2357.502 BITUMINOUS MATERIAL FOR TACK COAT  
 2360.609 TYPE MV3 WEARING COURSE MIXTURE ( MVWE35035 E ) .05 GAL / SQ YD  
 2360.609 TYPE LV3 WEARING COURSE MIXTURE FOR PATCHING ( LVWE35030 E ) (SQ YD\* IN\*115 LBS) / 2000 = TONS  
 (SQ YD\* IN\*115 LBS) / 2000 = TONS

**NOTES ...**

- 1 REPAIRS AT CATCH BASIN LOCATIONS.
- 2 SEED, FERTILIZER, TOPSOIL AT CB REPAIRS INCIDENTAL TO EROSION CONTROL BLANKET.
- 3 CB REPAIRS IN CONCRETE BUS PAD LOCATION.
- 4 COMPACT AROUND CB REPAIRS
- 5 PLACED ON SHLDR. AT EXISTING SIGNED LOCATIONS.
- 6 INCLUDES STREET APPROACHES.
- 7 WILL BE LOC. AND MARKED BY ANOKA COUNTY PRIOR TO MILLING.
- 8 REPLACE ONLY IF DAMAGED DURING MILLING OPERATION.
- 9 MARKINGS TO BE INPLACE PRIOR TO OPENING TO TRAFFIC.
- 10 TACK FOR MILLED BITUMINOUS AREAS. EST AT 0.05 GAL PER SQ YD.
- 11 TEMP LANE TAPE SKIPS TO BE PLACED ON NEW MAT AT THE END OF EACH DAYS PAVING.
- 12 TEMP PAINT SKIPS FOR MARKING LANE DELINEATION ON MILLED BIT. SURFACE AT THE END OF EACH DAYS MILLING.
- 13 INCLUDES BOTH RERING / GROUT AND RECONSTRUCT STORM CATCH BASINS.
- 14 INCLUDES MILLING AREA FOR STREET APPROACHES

## STANDARD PLATE DETAIL

PLATE NO.	DESCRIPTION
4010H	
4026A	CONCRETE SHORT CONE AND ADJUSTING RING
4126F	CONCRETE ENCASED CONCRETE ADJUSTING RINGS
4149C	CATCH BASIN FRAME CASTING
4161F	GRATE CASTING FOR CATCH BASIN
7100G	CURB BOX CASTING FOR CATCH BASIN
7111J	CONCRETE CURB AND GUTTER (DESIGN B)
8000I	INSTALLATION OF CATCH BASIN CASTING
	STANDARD BARRICADES

CERTIFIED BY

ANDREW J. WITTER, P.E.

LIC. NO. 42757 DATE 8/11/07


C.P. 07-17-01

SHEET NO. 2 OF 16 SHEETS

# STORM SEWER REPAIRS

STRUCTURE	STATION	LNB / LSB	LT / RT	SAW BIT. PAVEMENT	REMOVE BIT. PAVEMENT	REPLACE BIT. PAVEMENT	SAW CONC. PAVEMENT	REMOVE CONC. PAVEMENT	REPLACE CONC. PAVEMENT	EROSION CONT. BLANKET	REMOVE C&G	REPLACE B618 C-8G	ASSEMBLY	CASTING HT.	801 CASTING	GROUT	RE-RING / GROUT	RECONSTRUCT STORM C.B.	ACTION	
				LF	SY	TON	LF	SY	SY	SY	LF	LF		EA	EA	FT	FT			
101	10+01	LNB	RT													1			GROUT	
102	12+19	LNB	RT	28	9	3.58	4			9	20	20	A-1	11"	1			3.1	RECONSTRUCT	
103	18+31	LNB	RT																NONE	
104	18+62	LNB	RT	28	9	3.58	4			9	20	20	A-1	11"	1			2.4	RECONSTRUCT	
105	19+50	LNB	RT	28	9	3.58	4			9	20	20	A-2	6"	1			2.1	RECONSTRUCT	
106	23+49	LNB	RT																NONE	
107	27+79	LNB	RT													1			GROUT	
108	31+58	LNB	RT													1			GROUT	
109	33+18	LNB	RT																NONE	
110	36+69	LNB	RT	28	9	1.53	4			9	20	20	A-1	11"	1		0.6		RE-RING / GROUT / CASTING	
111	39+26	LNB	RT													1			GROUT	
112	42+08	LNB	RT													1			GROUT	
113	44+29	LNB	RT													1			GROUT	
114	46+39	LNB	RT													1			GROUT / INVERT	
115	48+39	LNB	RT	28	9	1.53	4			9	20	20	A-1	11"	1		0.7		RE-RING / GROUT / CASTING	
116	50+39	LNB	RT													1			GROUT	
117	52+02	LNB	RT													1			GROUT	
118	54+36	LNB	RT																NONE	
119	57+67	LNB	RT				22	4.4	4.4	4.4	20	20	A-1	11"	1			3.0	RECONSTRUCT	
120	59+96	LNB	RT																NONE	
121	61+86	LNB	RT	28	9	1.53	4			9	20	20	A-1	11"	1		0.2		RE-RING / GROUT / CASTING	
122	63+84	LNB	RT				22	4.4	4.4	4.4	20	20	A-1	11"	1		0.4		RE-RING / GROUT / CASTING	
123	65+71	LNB	RT	28	9	1.53	4			9	20	20	A-1	11"	1			2.8	RECONSTRUCT	
124	67+80	LNB	RT	18	4.4	0.76	22	4.4	4.4		20	20	A-1	11"	1			0.6	RE-RING / GROUT / CASTING	
125	70+15	LNB	RT													1			GROUT	
126	72+44	LNB	RT													1			GROUT	
127	75+03	LNB	RT	28	9	3.58	4			9	20	20	A-1	11"	1		0.4		RE-RING / GROUT / CASTING	
128	79+03	LNB	RT	28	9	3.58	4			9	20	20	A-1	11"	1		0.8		RE-RING / GROUT / CASTING	
129	81+47	LNB	RT																NONE	
130	84+85	LNB	RT													1			GROUT / INVERT	
131	87+00	LNB	RT	28	9	1.53	4			9	20	20	A-1	11"	1			3.1	RECONSTRUCT	
132	89+55	LNB	RT																NONE	
<b>LNB TOTALS</b>				<b>298</b>	<b>94.4</b>	<b>26.31</b>	<b>106</b>	<b>13.2</b>	<b>13.2</b>	<b>98.8</b>	<b>260</b>	<b>260</b>				<b>13</b>	<b>12</b>	<b>3.7</b>	<b>16.45</b>	
133	89+50	LSB	LT	28	9	3.58	4			9	20	20	A-1	11"	1		0.6		RE-RING / GROUT / CASTING	
134	87+50	LSB	LT	28	9	3.58	4			9	20	20	A-1	11"	1			2.5	RECONSTRUCT	
135	84+87	LSB	LT	28	9	3.58	4			9	20	20	A-1	11"	1			2.9	RECONSTRUCT	
136	81+48	LSB	LT													1			GROUT	
137	78+97	LSB	LT	28	9	3.58	4			9	20	20	A-1	11"	1		0.7		RE-RING / GROUT / CASTING	
138	74+97	LSB	LT	28	9	1.53	4			9	20	20	A-1	11"	1		0.8		RE-RING / GROUT / CASTING	
139	72+37	LSB	LT																NONE	
140	70+09	LSB	LT	28	9	1.53	4			9	20	20	A-1	11"	1		0.6		RE-RING / GROUT / CASTING	
141	67+75	LSB	LT																NONE	
142	65+67	LSB	LT																NONE	
143	63+78	LSB	LT																NONE	
144	60+81	LSB	LT	28	9	3.58	4			9	20	20	A-1	11"	1		0.6		RE-RING / GROUT / CASTING	
145	59+81	LSB	LT																NONE	
146	57+60	LSB	LT	28	9	3.58	4			9	20	20	A-1	11"	1		0.6		RE-RING / GROUT / CASTING	
147	55+71	LSB	LT	28	9	1.53	4			9	20	20	A-1	11"	1		0.6		RE-RING / GROUT / CASTING	
148	53+92	LSB	LT	28	9	1.53	4			9	20	20	A-1	11"	1		0.4		RE-RING / GROUT / CASTING	
149	51+98	LSB	LT													1			GROUT	
150	50+37	LSB	LT	28	9	1.53	4			9	20	20	A-1	11"	1		0.8		RE-RING / GROUT / CASTING	
151	48+36	LSB	LT	28	9	1.53	4			9	20	20	A-1	11"	1		0.6		RE-RING / GROUT / CASTING	
152	46+39	LSB	LT	28	9	3.58	4			9	20	20	A-1	11"	1		0.8		RE-RING / GROUT / CASTING	
153	44+29	LSB	LT	28	9	3.58	4			9	20	20	A-1	11"	1		0.4		RE-RING / GROUT / CASTING	
154	42+09	LSB	LT																NONE	
155	39+25	LSB	LT	28	9	1.53	4			9	20	20	A-1	11"	1		0.5		RE-RING / GROUT / CASTING	
156	36+69	LSB	LT	28	9	1.53	4			9	20	20	A-1	11"	1		0.4		RE-RING / GROUT / CASTING	
157	33+27	LSB	LT	28	9	1.53	4			9	20	20	A-1	11"	1		0.2		RE-RING / GROUT / CASTING	
158	31+03	LSB	LT	28	9	1.53	4			9	20	20	A-1	11"	1		1.0		RE-RING / GROUT / CASTING	
159	27+78	LSB	LT	28	9	1.53	4			9	20	20	A-1	11"	1		0.4		RE-RING / GROUT / CASTING	
160	23+48	LSB	LT	28	9	1.53	4			9	20	20	A-1	11"	1		1.1		RE-RING / GROUT / CASTING	
161	19+57	LSB	LT																NONE	
162	18+57	LSB	LT													1			GROUT	
163	17+49	LSB	LT	28	9	3.58	4			9	20	20	A-1	11"	1		0.2		RE-RING / GROUT / CASTING	
164	12+14	LSB	LT													1			GROUT	
165	10+00	LSB	LT	28	9	1.53	4			9	20	20	A-1	11"	1		0.8		RE-RING / GROUT / CASTING	
<b>LSB TOTALS</b>				<b>616</b>	<b>198</b>	<b>52.11</b>	<b>88</b>			<b>198</b>	<b>440</b>	<b>440</b>				<b>22</b>	<b>4</b>	<b>12.1</b>	<b>5.4</b>	

B. SCHEDULE OF CASTINGS				QTY.	914	292.4	78	194	13.2	13.2	296.8	700	700			35	16	15.8	21.85	GRAND TOTAL LNB / LSB
CASTING	GRATE	CURB BOX																		
A-1	801 11"	810	821B	34																
A-2	801 6"	810	821B	1																

CERTIFIED BY   
 ANDREW J. WITTER, P.E.  
 1. 07-17-01

LIC. NO. 42757 DATE 8/11/07  
 SHEET NO. 3 OF 16 SHEETS

C.	MANHOLES / GATE VALVES				
CAD POINT #	TYPE OF STRUCTURE	LNB / LSB	STA.	LOC. LT / RT	ACTION
CAD		CAD	CAD	CAD	FIELD
500	MH-SAN	LNB	11+09	RT	NONE
501	GV	LNB	12+38	RT	NONE
502	MH-TEL	LNB	17+17	RT	RAISE 0.5" BELL TELE. RESPONSIBILITY
503	GV	LNB	17+30	RT	NONE
504	MH-SAN	LNB	18+44	RT	NONE
505	MH-SAN	LNB	21+63	RT	NONE
506	GV	LNB	22+08	RT	RAISE 2" CONTRACTOR RESPONSIBILITY
507	MH-SAN	LNB	24+82	RT	NONE
508	MH-SAN	LNB	28+04	RT	NONE
509	MH-TEL	LNB	57+14	RT	RAISE 0.5" BELL TELE. RESPONSIBILITY
510	GAS VALVE	LNB	62+86	RT	RAISE 1.0 GAS COMPANY RESPONSIBILITY
511	GV	LNB	63+29	RT	NONE
512	MH-SAN	LNB	63+35	RT	NONE
513	GAS VALVE	LNB	63+82	RT	NONE
514	MH-TEL	LNB	65+89	RT	RAISE 0.5" BELL TELE. RESPONSIBILITY
515	MH-SAN	LNB	67+36	RT	RAISE 1.5" CONTRACTOR RESPONSIBILITY
516	MH-SAN	LNB	71+37	RT	NONE
517	MH-TEL	LNB	74+72	RT	NONE
518	MH-SAN	LNB	75+06	RT	NONE
519	MH-TEL	LNB	83+55	RT	RAISE 1.5" BELL TELE. RESPONSIBILITY
520	MH-SAN	LNB	83+78	RT	NONE
521	MH-SAN	LNB	84+21	RT	NONE
522	MH-SAN	LNB	84+45	RT	NONE
523	GV	LNB	84+45	RT	NONE
524	GV	LNB	84+41	RT	NONE

NOTE... CONTRACTOR RESPONSIBLE FOR COORDINATION OF BELL TELE AND GAS COMPANY ADJUSTMENTS.

**NOTES...**

- STOP HERE ON RED SIGNS TO BE PLACED AT STOP BAR LOCATIONS IMMEDIATELY AFTER MILLING SIGNALIZED INTERSECTIONS.
- POLICE OFFICER TO DIRECT TRAFFIC IN ADDITION TO CONTRACTOR EMPLOYEES DURING MILLING / PAVING SIGNALIZED INTERSECTIONS.
- SEED, FERTILIZER, AND TOPSOIL ARE INCIDENTAL TO EROSION CONTROL BLANKET AT C.B. REPAIRS.  
SEED - 50 B  
FERTILIZER - 22 - 5 - 10
- CATCH BASIN REPAIRS TO BE COMPLETED PRIOR TO MILLING ROAD SURFACE.
- CONTRACTOR RESPONSIBLE TO CONTACT BELL TELEPHONE TO RAISE 4 - MANHOLES.  
CONTRACTOR RESPONSIBLE TO CONTACT GAS COMPANY TO RAISE 1 GAS VALVE.  
CONTRACTOR TO RAISE 1 - MH SAN AND 1 - WATER GV.
- TRAFFIC CONTROL ITEM INCLUDES POLICE OFFICER FOR MILLING / PAVING SIGNALIZED INTERSECTIONS.
- ANOKA COUNTY NEEDS TO CONTACT M.T.C. TO MINIMIZE BUS TRAFFIC ON MILLED SHOULDERS.
- CATCH BASIN REPAIRS MUST BE COMPLETE AND BITUMINOUS BROUGHT BACK UP TO ORIGINAL HEIGHT TO ALLOW TRAFFIC TO RUN ON SHOULDERS WHILE MILLING MAINLINE THRU LANES.
- HEAT FUSED PAVEMENT MARKINGS SHALL BE INSTALLED FOLLOWING FINISH ROLLING NEW PAVEMENT AND INPLACE PRIOR TO OPENING LANES TO TRAFFIC.
- CONTRACTOR MUST COORDINATE MILLING / PAVING SCHEDULE WITH CITY OF COON RAPIDS POLICE DEPARTMENT FOR OFFICERS NEEDED FOR TRAFFIC CONTROL.
- CONTRACTOR MUST COORDINATE MILLING / PAVING SCHEDULE WITH ANOKA COUNTY SIGNAL DEPARTMENT FOR SIGNALS TO BE PUT ON FLASH FOR INTERSECTION MILLING / PAVING.
- MILLING SHOULDER / RIGHT TURN LANE CURB AREAS - DEPTH OF MILLING WILL BE MEASURED 1" DOWN FROM THE LIP OF CURB - NOT 1" FROM EXISTING PAVED SURFACE AND WILL NEED TO BE CHECKED AND ADJUSTED AS NECESSARY TO MAINTAIN NOT MORE THAN 1" MILL AT LIP OF CURB.
- MILLING THRU / LEFT TURN LANE CURB AREAS - DEPTH OF MILLING TO BE A CONSISTENT 1.5" MEASURED 1.5" DOWN FROM THE LIP OF MEDIAN CURB AND EXISTING BIT MAT.
- AFTER MILLING - TEMPORARY LANE SKIPS ARE TO BE STRIPPED BEFORE LEAVING FOR THE DAY.
- REMOVABLE LANE TAPE SKIPS TO BE INSTALLED ON FRESH PAVED MAT BEFORE FINAL STRIPPING.

CERTIFIED BY

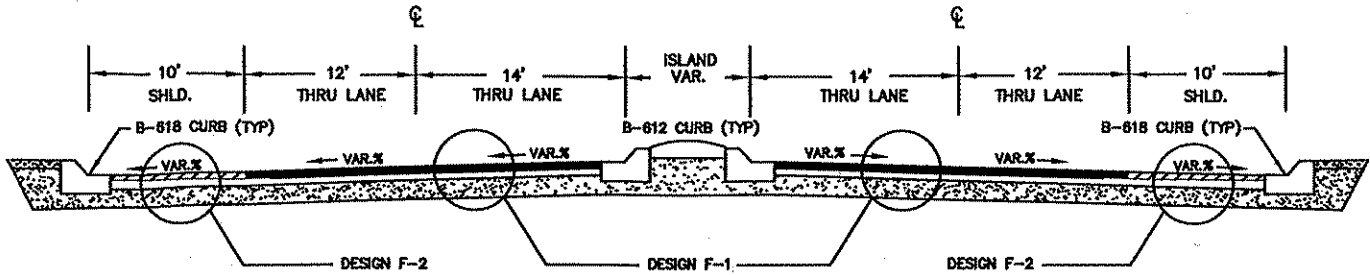
  
ANDREW J. WITTER, P.E.

LIC. NO. 42757 DATE 5/11/07

# TYPICAL SECTIONS

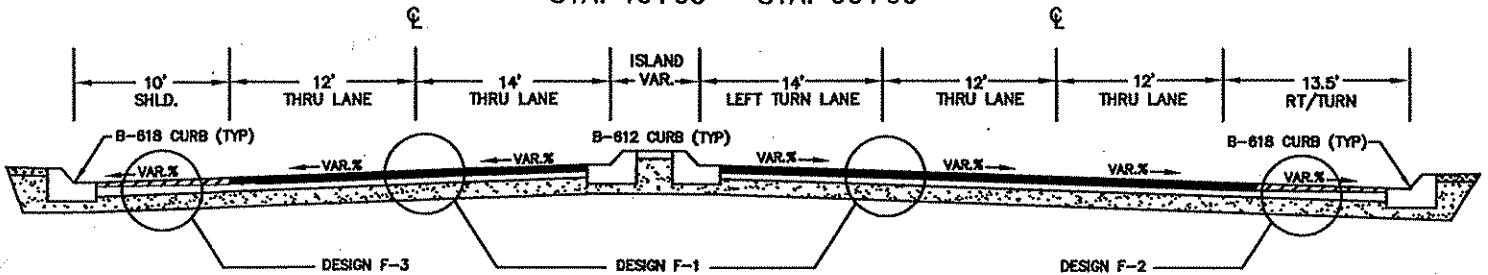
## STANDARD SECTION

STA. 10+00 - STA. 90+00

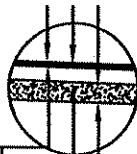


## TURN LANE SECTION

STA. 10+00 - STA. 90+00

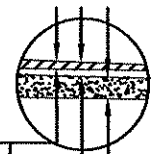


DESIGN F-1



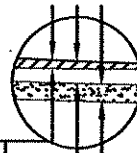
MILL 1.5" OF INPLACE BITUMINOUS  
PAVE 1.5" TYPE WEAR COURSE MVWE35035 E  
6" EXISTING BITUMINOUS  
8" EXISTING CONCRETE/CLASS-5 BASE

DESIGN F-3



MILL 1.0" TO 1.5" TAPERED MILL OF INPLACE BITUMINOUS  
PAVE 1.0" TO 1.5" TAPERED TYPE WEAR MVWE35035 E  
3" EXISTING BITUMINOUS  
7.5" EXISTING CLASS-5 BASE

DESIGN F-2

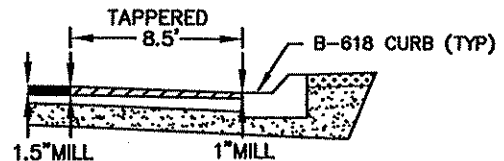


MILL 1.0" TO 1.5" TAPERED MILL OF INPLACE BITUMINOUS  
PAVE 1.0" TO 1.5" TAPERED TYPE WEAR MVWE35035 E  
7" EXISTING BITUMINOUS  
7.5" EXISTING CLASS-5 BASE

## TAPPERED EDGE MILL DETAIL

ENTIRE LENGTH OF SHLDR. CURB  
STA. 90+00 TO STA. 164+20 LNB/LSB

1" MILL @ LIP OF SHLDR./RTL CURB  
1.5" MILL @ 8.5' FROM LIP OF SHLDR./RTL CURB



NOTE: NOT TO SCALE

CERTIFIED BY

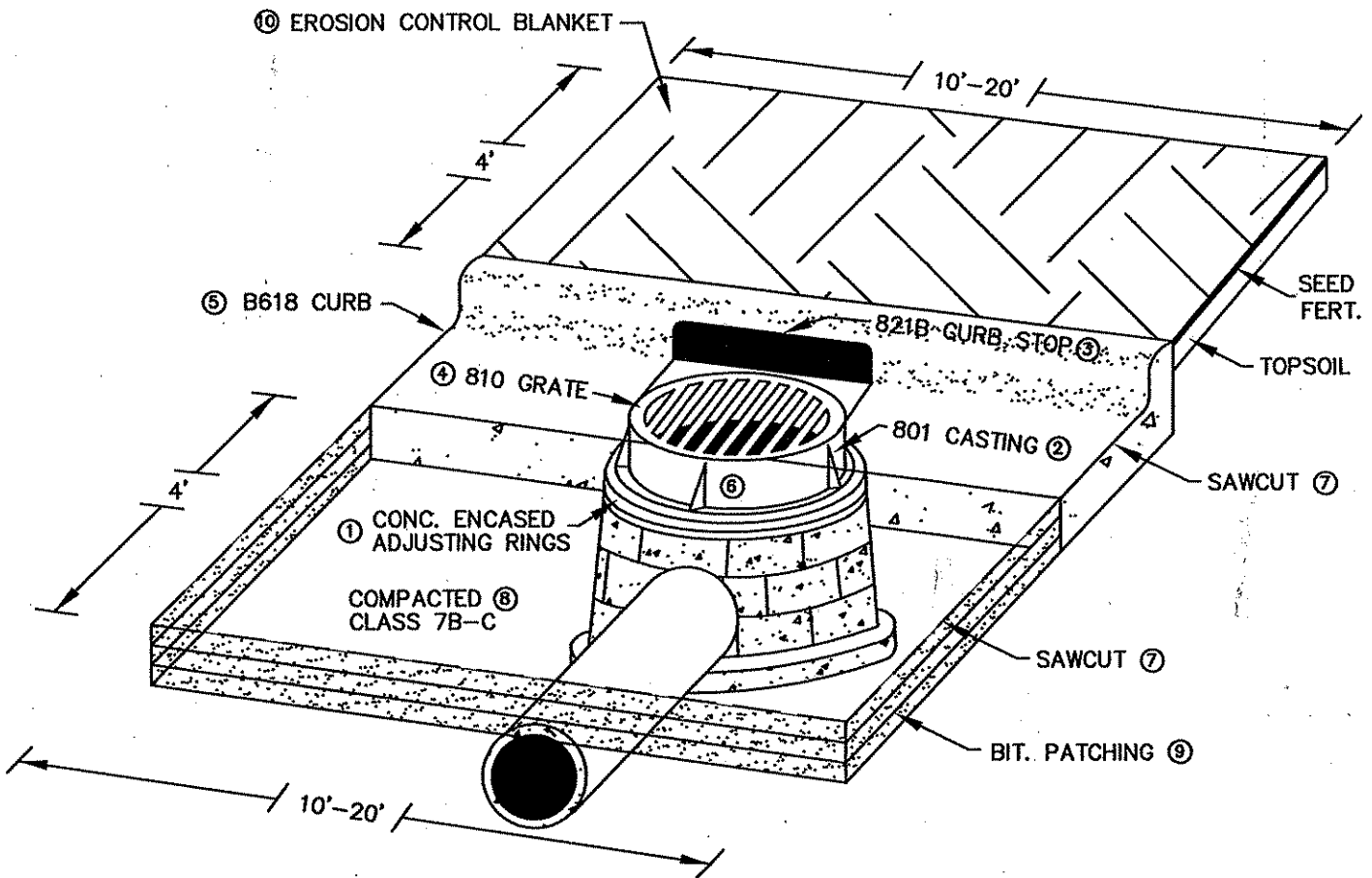
*Andrew J. Wittier*  
ANDREW J. WITTIER, P.E.

C.P. 07-17-01

LIC. NO. 42757 DATE 8/4/07

SHEET NO. 5 OF 16 SHEETS

# C.B. REPAIR DETAIL



NOTES.. FOR TRAFFIC CONTROL AT CATCH BASIN REPAIRS REFER TO 6K-63 AND 6K65 SHLDER. AND RTL CLOSURES IN THE MINNESOTA TEMPORARY CONTROL ZONE LAYOUTS FIELD MANUAL.

REFER TO MINNESOTA STANDARD PLATES MANUAL FOR THE FOLLOWING...

- ① CONCRETE ENCASED CONCRETE ADJUSTING RINGS STANDARD PLATE 4026A
- ② RING AND FRAME CASTING 801 STANDARD PLATE 4126F
- ③ CURB BOX 821B STANDARD PLATE 4161F
- ④ GRATE CASTING 810 STANDARD PLATE 4149C
- ⑤ CONCRETE CURB AND GUTTER DESIGN B STANDARD PLATE 7100G
- ⑥ INSTALLATION OF CATCH BASIN CASTINGS STANDARD PLATE 7111J
- ⑦ SAWCUT BIT./CONCRETE BUS PADS/CONCRETE CURB FULL DEPTH.
- ⑧ ADD AND COMPACT CL-7B-C AROUND REPAIRED STRUCTURE.
- ⑨ REMOVE VAR. DEPTH BITUMINOUS 3"-7" / PATCH 2-LIFTS OF BITUMINOUS.
- ⑩ REPLACE DISPLACED TOPSOIL- SEED, FERT. AND COVER WITH EROS. BLANKET. SEED , FERT. AND TOPSOIL INNcidental TO BLANKET.

NOTE: NOT TO SCALE

CERTIFIED BY

*Andrew J. Wittier*  
ANDREW J. WITTIER, P.E.

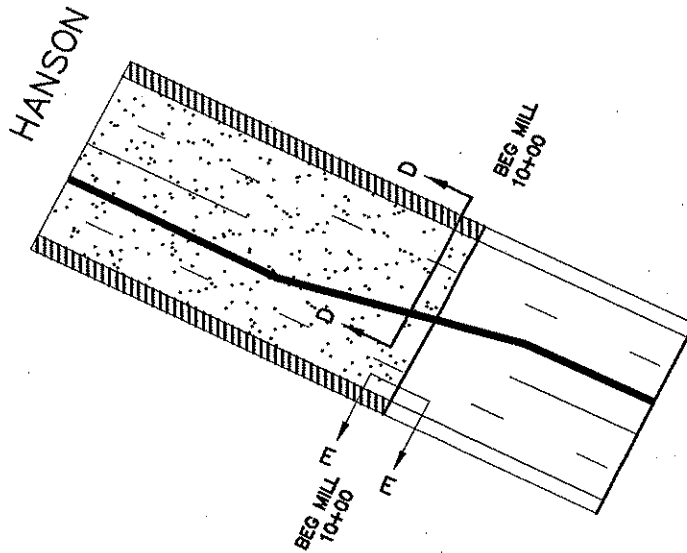
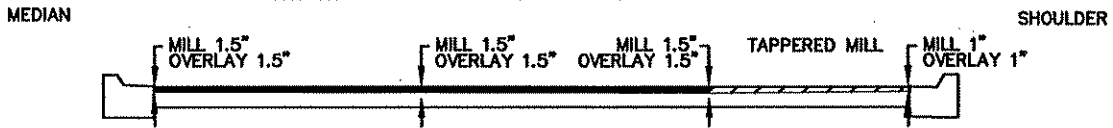
LIC. NO. 42757 DATE 5/11/09

C.P. 07-17-01

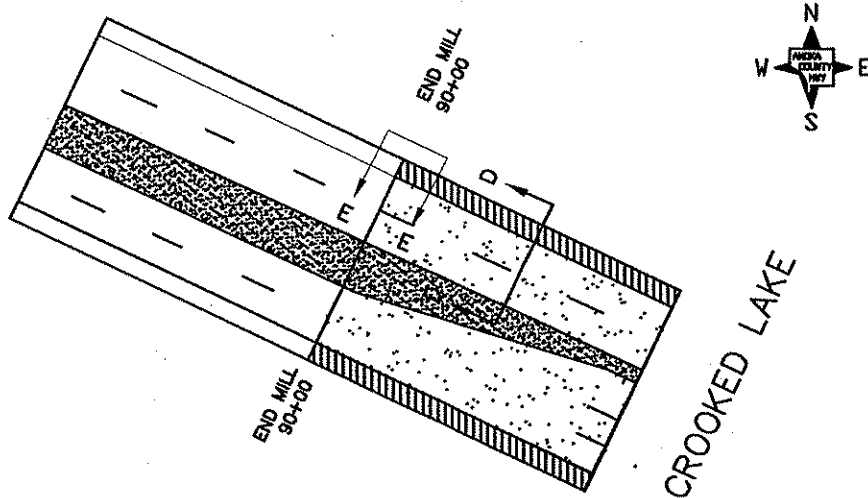
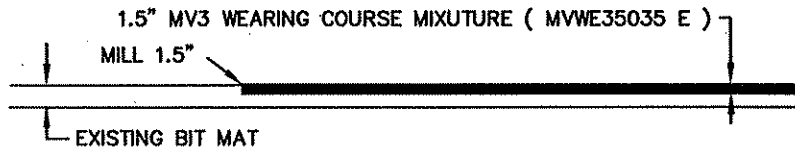
SHEET NO. 6 OF 16 SHEETS

# MILL DETAILS

## MILL DETAIL D - D MILL AS DIRECTED BY THE ENGINEER



## MILL DETAIL E - E MILL AS DIRECTED BY THE ENGINEER



NOTE: NOT TO SCALE

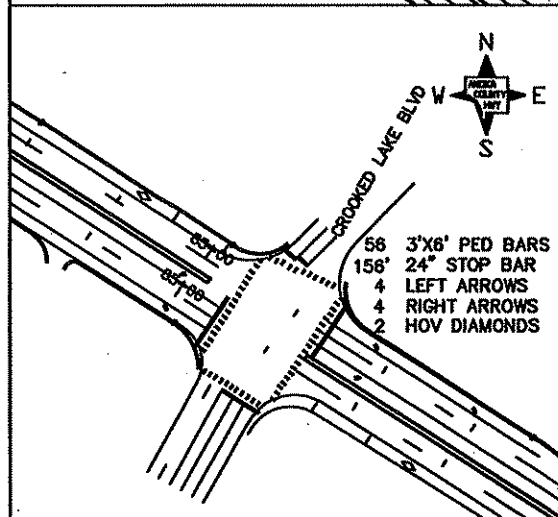
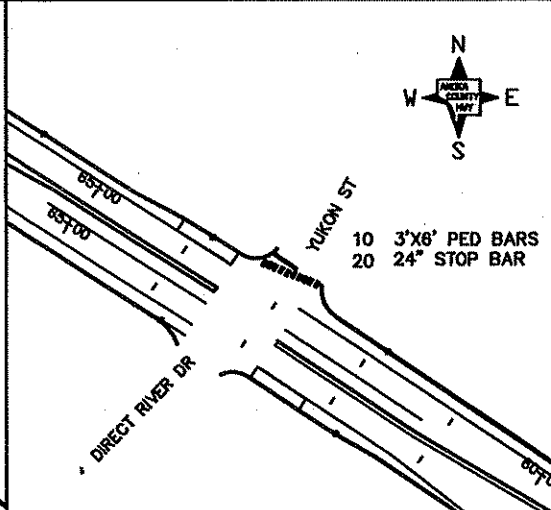
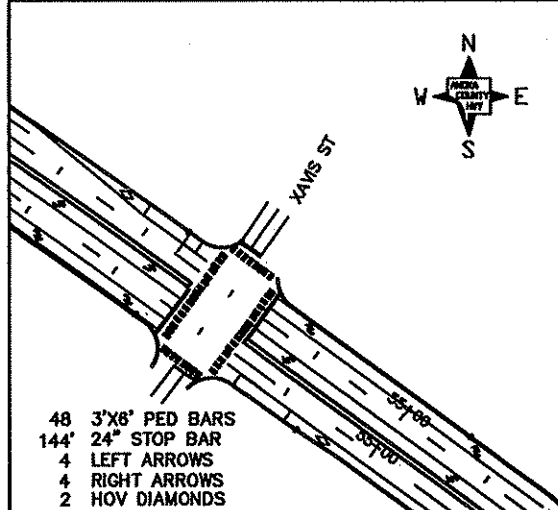
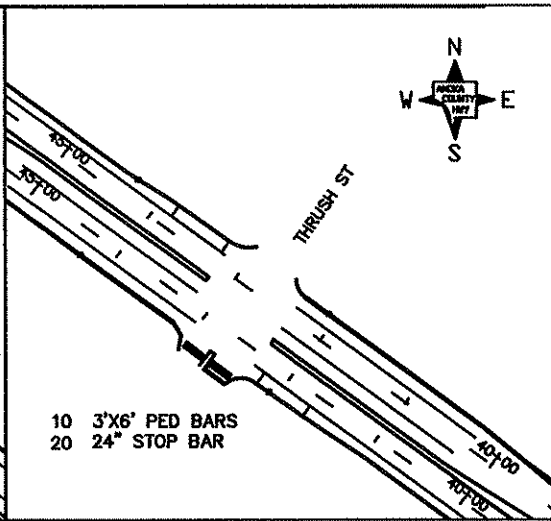
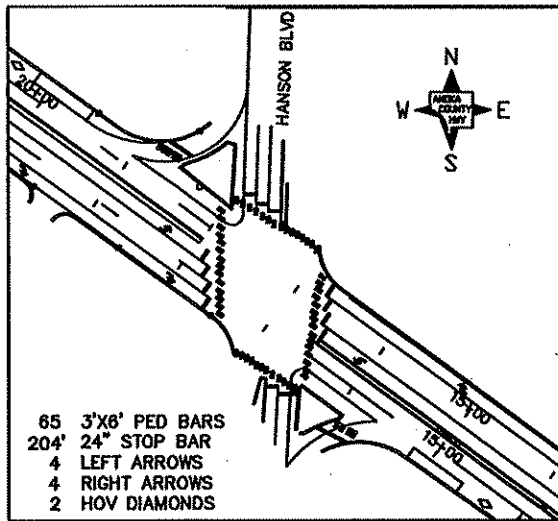
CERTIFIED BY Andrew J. Witter  
ANDREW J. WITTER, P.E.

C.P. 07-17-01

LIC. NO. 42757 DATE 8/14/07

SHEET NO. 7 OF 16 SHEETS

# PAVEMENT MARKINGS



NOTE: ...

PAVEMENT MARKINGS TO BE INSTALLED IMMEDIATELY FOLLOWING FINISH ROLLING NEW MAT AND INPLACE PRIOR TO OPENING TO TRAFFIC.

HOV DIAMONDS TO BE INSTALLED AT SIGNALIZED INTERSECTIONS ADJACENT HOV SIGNS.

NOTE: NOT TO SCALE

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ANDREW J. WITTER, P.E.

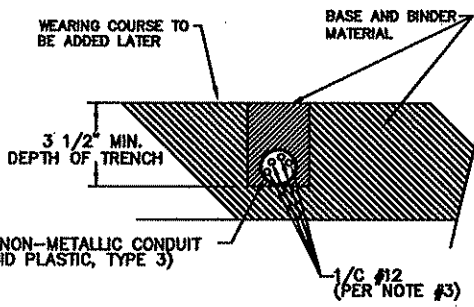
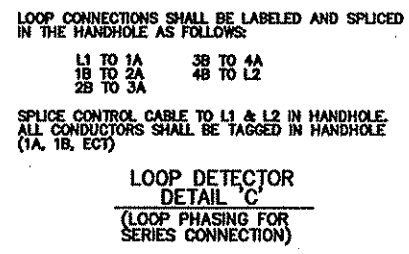
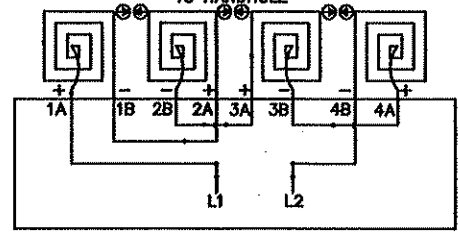
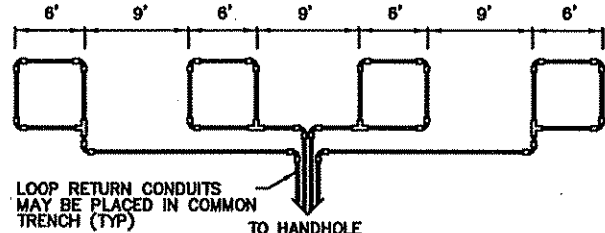
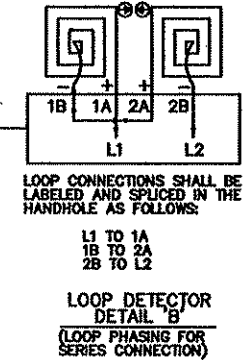
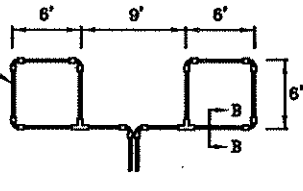
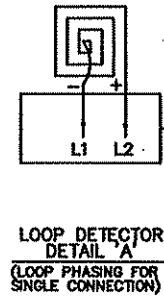
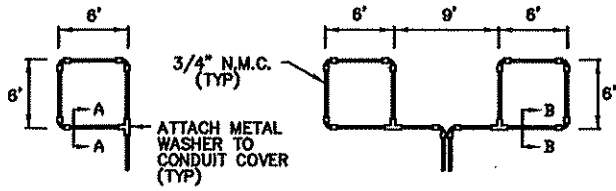
C.P. 07-17-01

LIC. NO. 42757 DATE 5/11/07

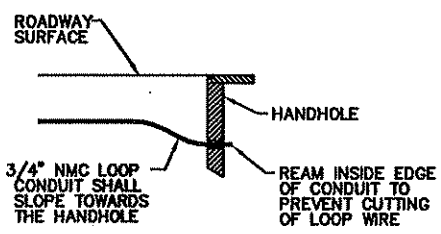
SHEET NO. 8 OF 16 SHEETS



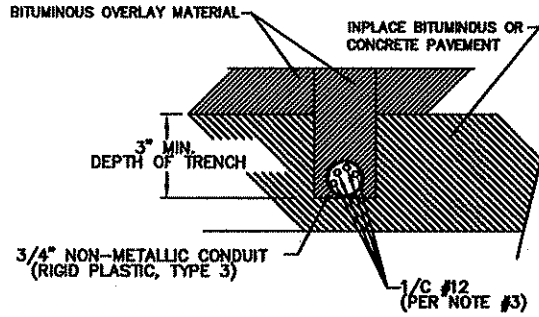
# SIGNAL LOOP DETAIL



**SECTION A-A**  
DETAIL FOR LOOP INSTALLATION  
IN NEW ROADWAY



**DRAINAGE DETAIL**



**SECTION B-B**  
DETAIL FOR LOOP INSTALLATION  
IN EXISTING ROADWAY

**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.

NOTE: NOT TO SCALE

CERTIFIED BY Andrew J. Witter  
ANDREW J. WITTER, P.E.  
C.P. 07-17-01

LIC. NO. 42757 DATE 8/11/07  
SHEET NO. 9 OF 16 SHEETS

# SIGNAL LOOP DETAIL

## ABBREVIATIONS

3-1(EG)	SIGNAL HEAD PHASE '3' - NO '1'	P2-1(EG)	PED INDICATION PHASE '2' - NO. '1'
BR. GR.	BARE GROUND	PB	PUSH BUTTON
CH. SV.	CHECK SWITCH	PR2-1(EG)	PUSH BUTTON PHASE '2' - NO. '1'
CLR	CLEAR	PEC	PHOTOELECTRIC CELL
D2-1(EG)	DETECTOR PHASE '2' - NO. '1'	PED	PEDESTRIAN
DVK	DON'T WALK	R	RED
EDG	EQUIPMENT GROUND	R/S	REMOVE AND SALVAGE
EVP	EMERGENCY VEHICLE PRE-EMPTION	RLTA	RED LEFT TURN ARROW
F&I	FURNISH AND INSTALL	RRTA	RED RIGHT TURN ARROW
FL	FLASH/FLASHING	RSC	RIGID STEEL CONDUIT
G	GREEN	SDP	SOURCE OF POWER
GLTA	GREEN LEFT TURN ARROW	SPR	SPARE
GRN	GREEN	ST. LHT	STREET LIGHT
GR. R	GROUND ROD	STA	STATION
GRTA	GREEN RIGHT TURN ARROW	SV	SWITCH
GTHA	GREEN THRU ARROW	SWD	SWITCHED
H	HANDHOLE	S&R	SALVAGE AND REINSTALL
HPS	HIGH PRESSURE SODIUM	TDW	TELEPHONE DROP WIRE
JB	JUNCTION BOX	WLK	WALK
LUM	LUMINAIRE	YEL	YELLOW
NEU	NEUTRAL	YLTA	YELLOW LEFT TURN ARROW
NMC	NONMETALLIC CONDUIT	YRTA	YELLOW RIGHT TURN ARROW
		YTHA	YELLOW THRU ARROW

## 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 - IN PLACE	
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 - IN PLACE	
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	

## STANDARD PLATES

THESE STANDARD PLATES AS APPROVED BY FHWA SHALL APPLY.

PLATE NO.	DESCRIPTION
7035 L	CONCRETE WALK AND CURB RETURNS AT ENTRANCES
7036 E	PEDESTRIAN CURB RAMP
7100 G	CONCRETE CURB AND GUTTER (DESIGN B)
8110 D	TRAFFIC SIGNAL BRACKETING - POLE MOUNTED
8111 C	TRAFFIC SIGNAL BRACKETING - PEDESTAL MOUNTED
8112 C	PEDESTAL FOUNDATION
8114 A	PVC HANDHOLE/PULLBOX
8115 D	PEDESTRIAN PUSH BUTTON INSTALLATION
8118 C	SERVICE EQUIPMENT AND POLE-TRAFFIC CONTROL SIGNALS
8119 C	GROUND MOUNTED CABINET FOUNDATION
8120 K	PASS POLE FOUNDATION
8121 D	TRANSFORMER BASE AND POLE BASE PLATE
8122 G	PEDESTAL AND PEDESTAL BASE
8123 E	POLE AND MAST ARM
8124 E	MAST ARM SIGNAL HEAD MOUNTS
8128 F	PASO AND PA100 POLE FOUNDATION

## CONDUCTOR COLOR CODE

R	RED
O	ORANGE
BL	BLUE
WH	WHITE
R/BLK	RED WITH BLACK TRACER
O/BLK	ORANGE WITH BLACK TRACER
BL/BLK	BLUE WITH BLACK TRACER
WH/BLK	WHITE WITH BLACK TRACER
BLK	BLACK
BLK/WH	BLACK WITH WHITE TRACER
G/BLK	GREEN WITH BLACK TRACER
G	GREEN

CERTIFIED BY

ANDREW J. WITTER, P.E.

LIC. NO. 42757 DATE 8/1/07

C.P. 07-17-01

SHEET NO. 10 OF 16 SHEETS

7013

NUMBER	SIZE	LOCATION	FUNCTION
D1-1	2-1/2 X 1-7	6m & 11m	
D1-2	2-1/2 X 1-7	1.5m & 11m	
D2-1	1-1/2 X 1-1	32 m	
D2-2	1-1/2 X 1-1	76 m	
D3-1	2-1/2 X 1-7	1.5m & 4.5m	
D3-2	2-1/2 X 1-7	1.5m & 11m	
D3-3	2-1/2 X 1-7	6m & 15m	
D3-4	2-1/2 X 1-7	1.5m & 11m	
D3-5	2-1/2 X 1-7	1.5m & 11m	
D3-6	2-1/2 X 1-7	1.5m & 11m	
D3-7	2-1/2 X 1-7	6m & 15m	
D3-8	2-1/2 X 1-7	1.5m & 11m	
D3-9	2-1/2 X 1-7	1.5m & 11m	
D3-10	2-1/2 X 1-7	1.5m & 11m	
D3-11	2-1/2 X 1-7	1.5m & 11m	
D3-12	2-1/2 X 1-7	1.5m & 11m	
D3-13	2-1/2 X 1-7	1.5m & 11m	
D3-14	2-1/2 X 1-7	1.5m & 11m	
D3-15	2-1/2 X 1-7	1.5m & 11m	
D3-16	2-1/2 X 1-7	1.5m & 11m	
D3-17	2-1/2 X 1-7	1.5m & 11m	
D3-18	2-1/2 X 1-7	1.5m & 11m	
D3-19	2-1/2 X 1-7	1.5m & 11m	
D3-20	2-1/2 X 1-7	1.5m & 11m	

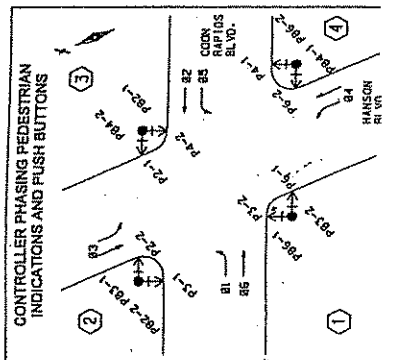
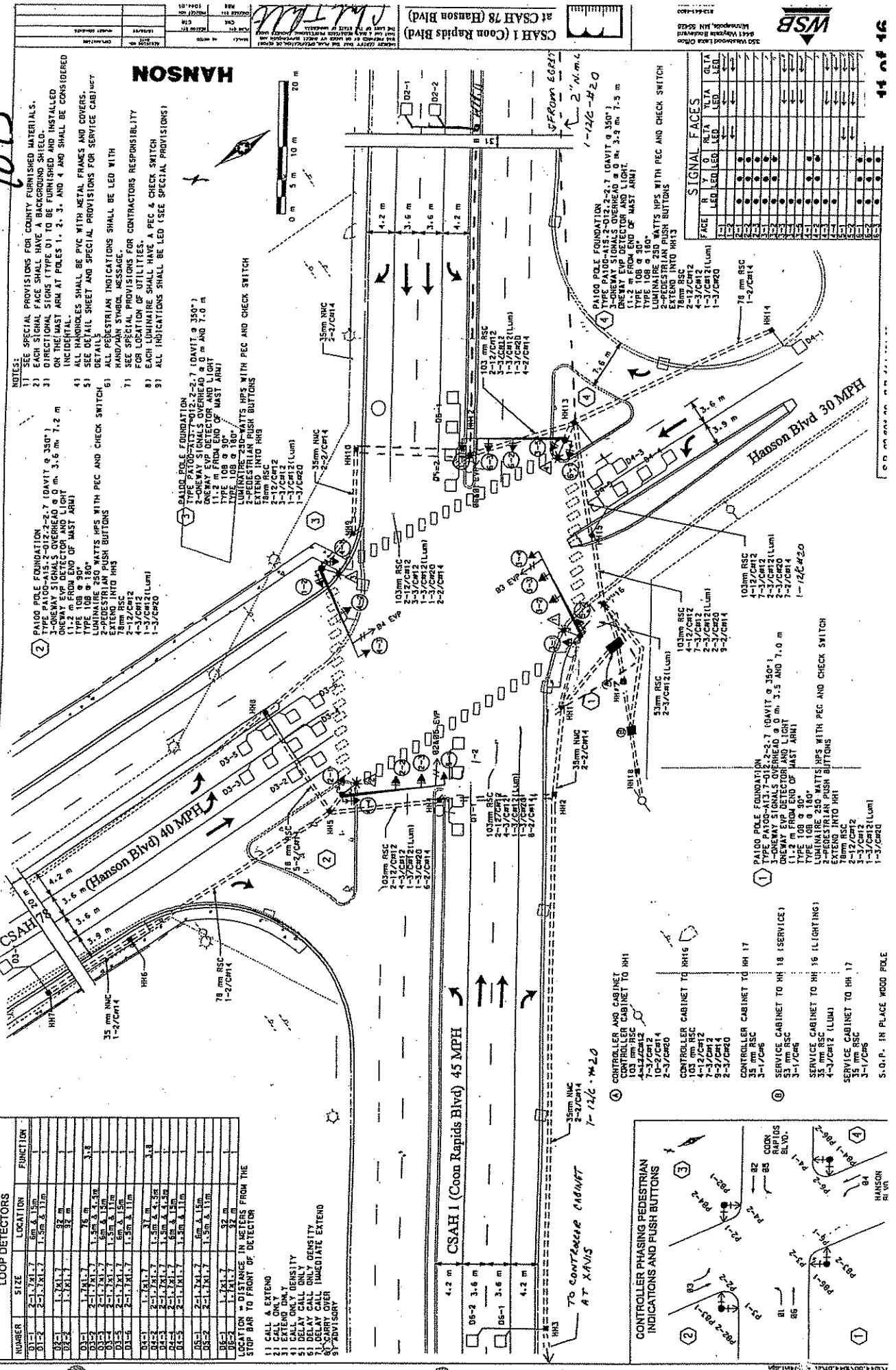
LOCATION \* DISTANCE IN METERS FROM THE STOP BAR TO FRONT OF DETECTOR

1) CALL & EXTEND  
 2) CALL ONLY  
 3) EXTEND ONLY  
 4) CALL ONLY DENSITY  
 5) DELAY CALL ONLY DENSITY  
 6) DELAY CALL IMMEDIATE EXTEND  
 8) SHARRY OVER  
 9) ADVISORY

**NOTES:**

- SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
- EACH SIGNAL FACE SHALL HAVE A BACKGROUND SHIELD.
- DIRECTIONAL SIGNS (TYPE D1) TO BE FURNISHED AND INSTALLED UNLESS OTHERWISE NOTED.
- ALL HANDSIZES SHALL BE PVC WITH METAL FRAMES AND COVERS.
- SEE DETAIL SHEET AND SPECIAL PROVISIONS FOR SERVICE CABINET DETAILS.
- ALL PEDESTRIAN INDICATIONS SHALL BE LED WITH HAND/ARM SYMBOL MESSAGE.
- SEE SPECIAL PROVISIONS FOR CONTRACTORS RESPONSIBILITY FOR LOCATION OF UTILITIES.
- EACH LUMINAIRE SHALL HAVE A PEC & CHECK SWITCH
- ALL INDICATIONS SHALL BE LED (SEE SPECIAL PROVISIONS)

**HANSON**



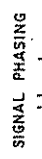
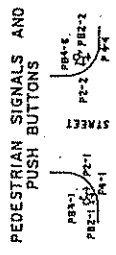
**SIGNAL FACES**

FACE	TYPE	LED	LED	LED	LED	DELTA	DELTA	DELTA	DELTA
1	1-12/C-420								
2	1-12/C-420								
3	1-12/C-420								
4	1-12/C-420								
5	1-12/C-420								
6	1-12/C-420								
7	1-12/C-420								
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7014

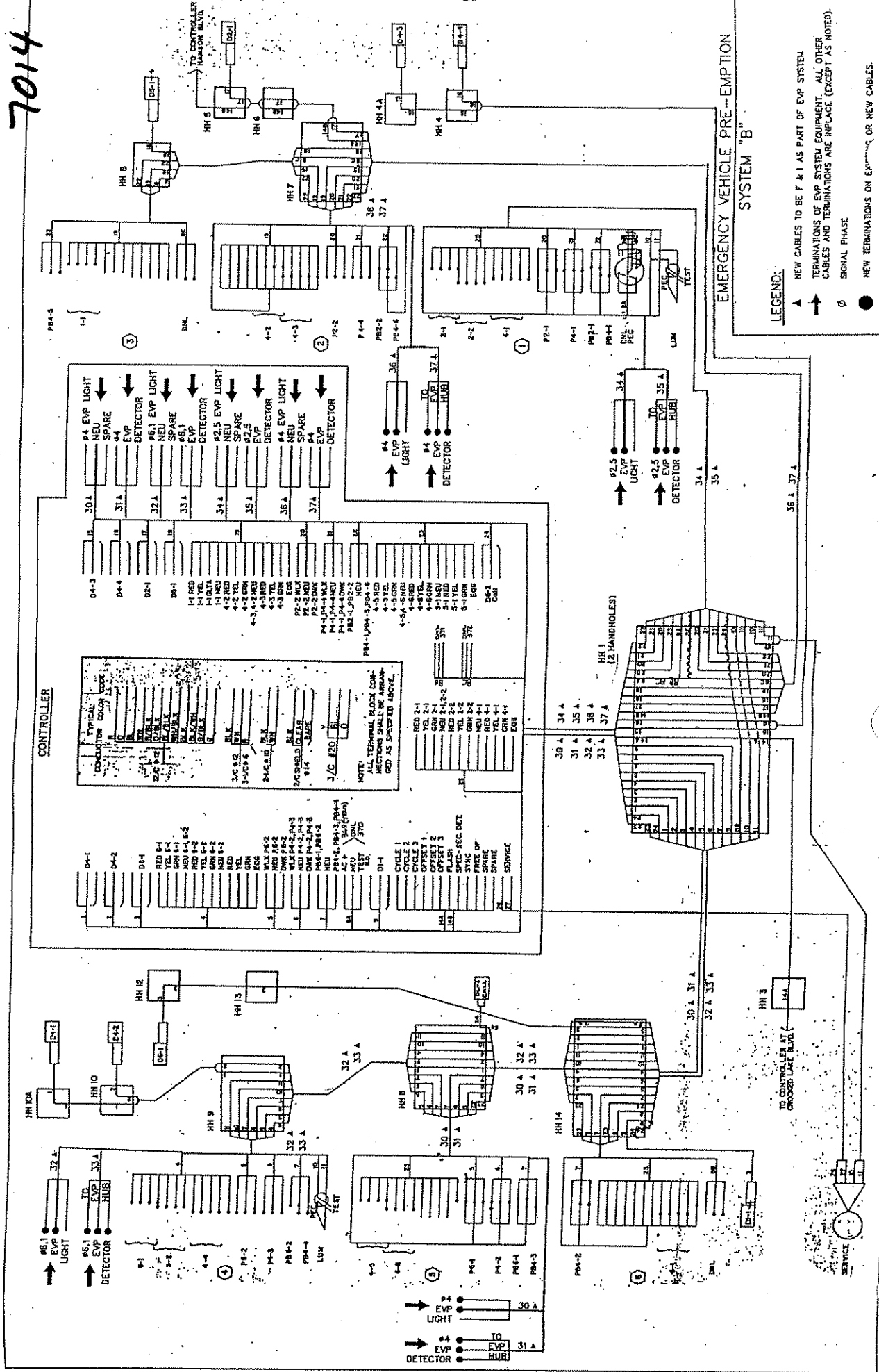
SIAS



SIGNAL FACES		
SIGNAL FACE	ALL 12"	
R	Y	G
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757	758	759
760	761	762
763	764	765
766	767	768
769	770	771
772	773	774
775	776	777
778	779	780
781	782	783
784	785	786
787	788	789
790	791	792
793	794	795
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799	800	801
802	803	804
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808	809	810
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814	815	816
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820	821	822
823	824	825
826	827	828
829	830	831
832	833	834
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838	839	840
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847	848	849
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853	854	855
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892	893	894
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898	899	900
901	902	903
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967	968	969
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973	974	975
976	977	978
979	980	981
982	983	984
985	986	987
988	989	990
991	992	993
994	995	996
997	998	999
1000	1001	1002

CONTROLLER CABINET TO H.H.1:  
 3" RSC  
 3-12/cf12  
 4-3/cf12  
 4-2/CS#14  
 F & I 12-3/cf12  
 F & I 13-3/cf12  
 F & I 14-3/cf12  
 F & I 15-3/cf12  
 F & I 16-3/cf12  
 F & I 17-3/cf12  
 F & I 18-3/cf12  
 F & I 19-3/cf12  
 F & I 20-3/cf12  
 F & I 21-3/cf12  
 F & I 22-3/cf12  
 F & I 23-3/cf12  
 F & I 24-3/cf12

7014



CONTROLLER

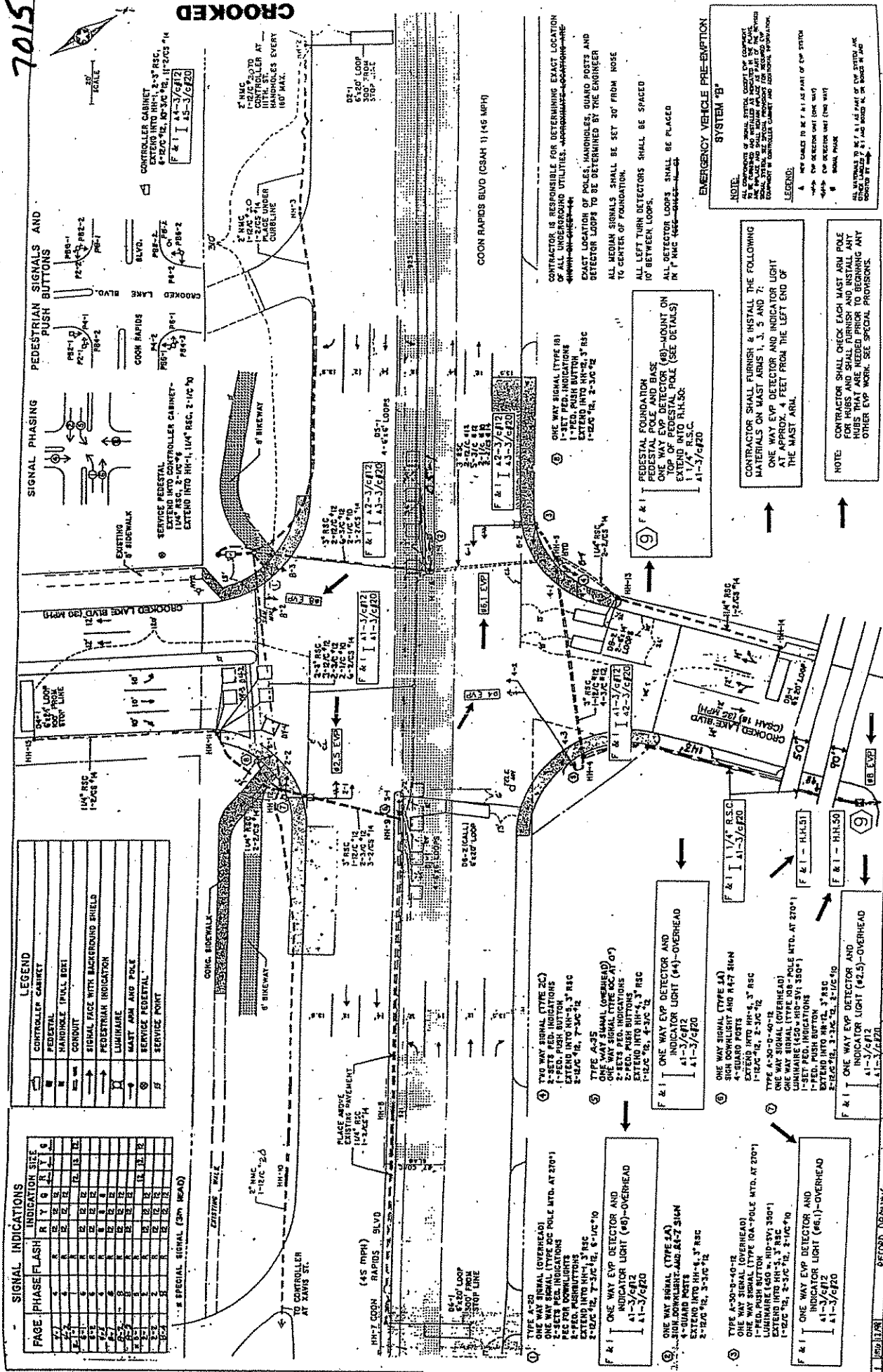
CONNECTION SCHEDULE

D4-1	RED	24	WALK
D4-2	RED	24	WALK
D4-3	RED	24	WALK
D4-4	RED	24	WALK
D4-5	RED	24	WALK
D4-6	RED	24	WALK
D4-7	RED	24	WALK
D4-8	RED	24	WALK
D4-9	RED	24	WALK
D4-10	RED	24	WALK
D4-11	RED	24	WALK
D4-12	RED	24	WALK
D4-13	RED	24	WALK
D4-14	RED	24	WALK
D4-15	RED	24	WALK
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D4-92	RED	24	WALK
D4-93	RED	24	WALK
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D4-95	RED	24	WALK
D4-96	RED	24	WALK
D4-97	RED	24	WALK
D4-98	RED	24	WALK
D4-99	RED	24	WALK
D4-100	RED	24	WALK

LEGEND:

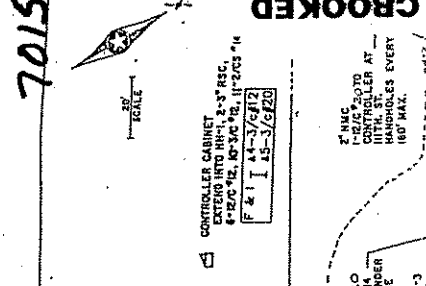
- ▲ NEW CABLES TO BE F & I AS PART OF EVP SYSTEM
- TERMINATIONS OF EVP SYSTEM EQUIPMENT. ALL OTHER CABLES AND TERMINATIONS ARE IN PLACE (EXCEPT AS NOTED).
- SIGNAL PHASE
- NEW TERMINATIONS ON EXISTING OR NEW CABLES.

71015



SIGNAL INDICATIONS		INDICATOR SIZE	
FACE	PHASE/FLASH	R	Y
1	W	12"	12"
2	W	12"	12"
3	W	12"	12"
4	W	12"	12"
5	W	12"	12"
6	W	12"	12"
7	W	12"	12"
8	W	12"	12"
9	W	12"	12"
10	W	12"	12"
11	W	12"	12"
12	W	12"	12"
13	W	12"	12"
14	W	12"	12"
15	W	12"	12"
16	W	12"	12"
17	W	12"	12"
18	W	12"	12"
19	W	12"	12"
20	W	12"	12"
21	W	12"	12"
22	W	12"	12"
23	W	12"	12"
24	W	12"	12"
25	W	12"	12"
26	W	12"	12"
27	W	12"	12"
28	W	12"	12"
29	W	12"	12"
30	W	12"	12"

LEGEND	
[Symbol]	CONTROLLER CABINET
[Symbol]	PED. SIGNAL (PUSH BUTTON)
[Symbol]	CONDUIT
[Symbol]	SIGNAL FACE WITH BACKGROUND SHIELD
[Symbol]	PED. SIGNAL INDICATOR
[Symbol]	LUMINAIRE
[Symbol]	MAST ARM AND POLE
[Symbol]	SERVICE PED. SIGNAL
[Symbol]	SERVICE POINT



**CONTRACTOR IS RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UNDERGROUND UTILITIES. APPROXIMATE LOCATIONS ARE SHOWN BY DASHED LINES.**

**EXACT LOCATION OF POLES, HANDHOLES, GUARD POSTS AND DETECTOR LOOPS TO BE DETERMINED BY THE ENGINEER TO CENTER OF FOUNDATION.**

**ALL LEFT TURN DETECTORS SHALL BE SPACED 10' BETWEEN LOOPS.**

**ALL DETECTOR LOOPS SHALL BE PLACED IN 7' NMC LOOP SPACING UNLESS OTHERWISE NOTED.**

**EMERGENCY VEHICLE PRE-EMPTION SYSTEM 'B'**

**NOTE:**  
ALL COMPONENTS OF SIGNAL SYSTEM, EXCEPT E.V.P. COMPONENTS, SHALL BE PLACED AND INSTALLED AS PART OF THE SIGNAL SYSTEM. THE E.V.P. COMPONENTS SHALL BE PLACED AND INSTALLED AS PART OF THE E.V.P. SYSTEM. THE E.V.P. SYSTEM SHALL BE INSTALLED AND OPERATED IN ACCORDANCE WITH THE E.V.P. SYSTEM MANUAL.

**LEGEND:**  
A: ANY CABLE TO BE F.A.I. AS PART OF E.V.P. SYSTEM  
B: E.V.P. DETECTOR UNIT (ONE WAY)  
C: E.V.P. DETECTOR UNIT (TWO WAY)  
D: SIGNAL POLE

**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 E.V.P. WORK. SEE SPECIAL PROVISIONS.

**CONTRACTOR IS RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UNDERGROUND UTILITIES. APPROXIMATE LOCATIONS ARE SHOWN BY DASHED LINES.**

**EXACT LOCATION OF POLES, HANDHOLES, GUARD POSTS AND DETECTOR LOOPS TO BE DETERMINED BY THE ENGINEER TO CENTER OF FOUNDATION.**

**ALL LEFT TURN DETECTORS SHALL BE SPACED 10' BETWEEN LOOPS.**

**ALL DETECTOR LOOPS SHALL BE PLACED IN 7' NMC LOOP SPACING UNLESS OTHERWISE NOTED.**

**EMERGENCY VEHICLE PRE-EMPTION SYSTEM 'B'**

**NOTE:**  
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**LEGEND:**  
A: ANY CABLE TO BE F.A.I. AS PART OF E.V.P. SYSTEM  
B: E.V.P. DETECTOR UNIT (ONE WAY)  
C: E.V.P. DETECTOR UNIT (TWO WAY)  
D: SIGNAL POLE

**NOTE:**  
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