

PLAN SYMBOLS

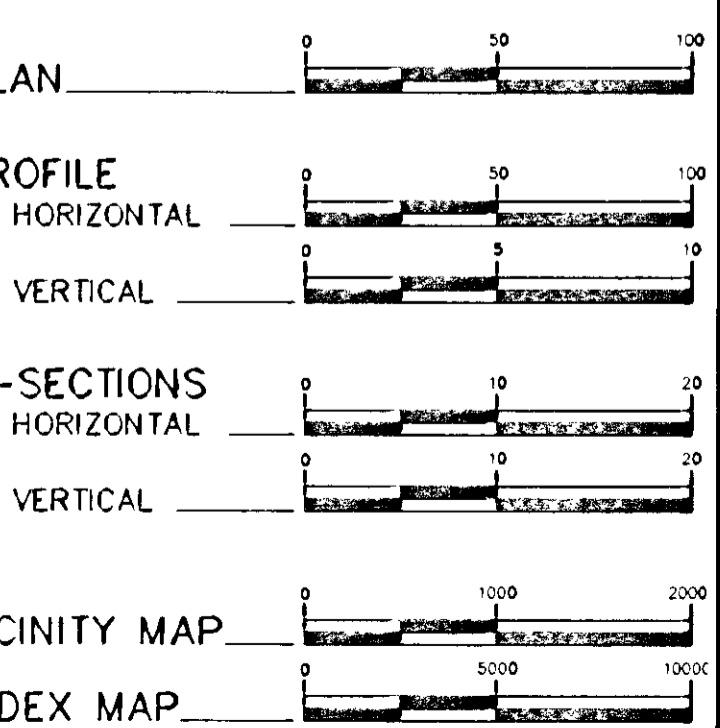
- COUNTY LINE \_\_\_\_\_
- TOWNSHIP OR RANGE LINE \_\_\_\_\_
- SECTION LINE \_\_\_\_\_
- QUARTER LINE \_\_\_\_\_
- SIXTEENTH LINE \_\_\_\_\_
- RIGHT OF WAY LINE \_\_\_\_\_
- SLOPE EASEMENT \_\_\_\_\_
- PRESENT RIGHT OF WAY \_\_\_\_\_
- PROPERTY LINE \_\_\_\_\_
- CORPORATE OR CITY LIMITS \_\_\_\_\_
- RETAINING WALL \_\_\_\_\_
- RAILROAD \_\_\_\_\_
- RAILROAD RIGHT OF WAY \_\_\_\_\_
- RIVER OR CREEK \_\_\_\_\_
- DRAINAGE DITCH \_\_\_\_\_
- CULVERT \_\_\_\_\_
- DROP INLET \_\_\_\_\_
- GAURD RAIL \_\_\_\_\_
- BARBED WIRE FENCE \_\_\_\_\_
- WOVEN WIRE FENCE \_\_\_\_\_
- CHAIN LINK FENCE \_\_\_\_\_
- WOOD FENCE \_\_\_\_\_
- STONE WALL OR FENCE \_\_\_\_\_
- HEDGE \_\_\_\_\_

- LOWLAND \_\_\_\_\_
- TIMBER \_\_\_\_\_
- ORCHARD \_\_\_\_\_
- BRUSH \_\_\_\_\_
- NURSERY \_\_\_\_\_
- CATTLE GAURD \_\_\_\_\_
- OVERPASS (Highway Over) \_\_\_\_\_
- UNDERPASS (Highway Under) \_\_\_\_\_
- BRIDGE \_\_\_\_\_
- BUILDING (One Story Frame) \_\_\_\_\_
- 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 \_\_\_\_\_
- GEOTECHNICAL BORINGS \_\_\_\_\_

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 \_\_\_\_\_
- BURIED ELECTRIC CABLE \_\_\_\_\_
- AERIAL TELEPHONE CABLE \_\_\_\_\_
- SEWER (Sanitary or Storm) \_\_\_\_\_
- SEWER MANHOLE \_\_\_\_\_

SCALES



MINNESOTA DEPARTMENT OF TRANSPORTATION

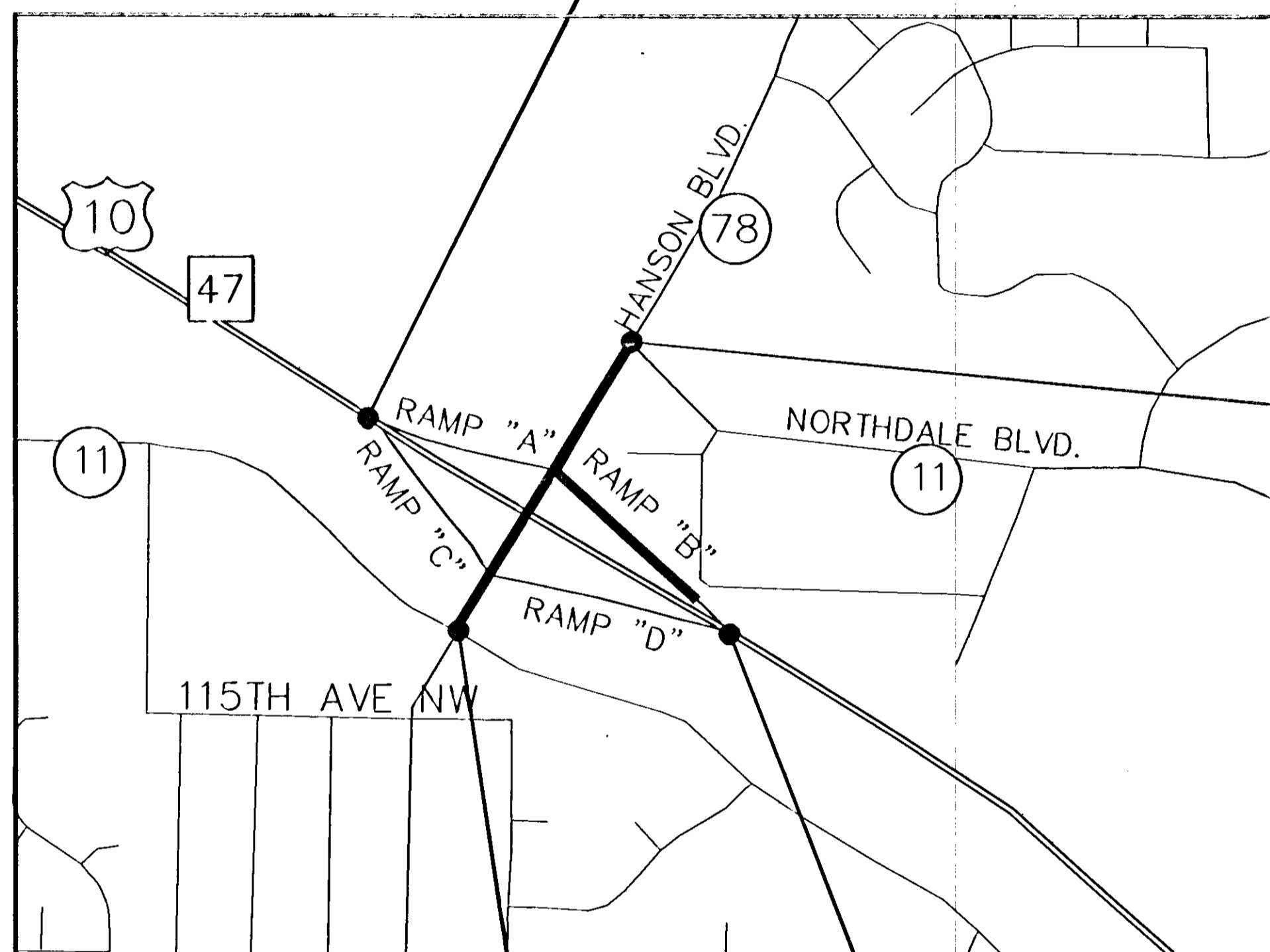
ANOKA COUNTY, MINNESOTA

CITY OF COON RAPIDS

CONSTRUCTION PLAN FOR GRADING, DRAINAGE, AGGREGATE BASE, BITUMINOUS SURFACING, CURB AND GUTTER, TRAFFIC SIGNAL SYSTEMS AND CONCRETE WALK.

LOCATED ON HANSON BLVD (CSAH 78) FROM NORTHDAL BLVD SOUTH JCT TO NORTHDAL BLVD NORTH JCT (CSAH 11)/ROBINSON DR (CSAH 11)

BEG. PROJ. S.P. 0215-50  
T.H. 10 POT 10+00.00



BEG. PROJ. S.P. 0215-48  
S.P. 02-611-26  
S.P. 114-020-11  
LSB P.O.T. 2+71.73

END S.P. 0215-50  
T.H. 10 P.O.T. 41+41.69



STATE PROJ. NO. 0215-48 (T.H.10 = 062)  
STATE PROJ. NO. 02-611-26  
STATE PROJ. NO. 114-020-11  
GROSS LENGTH 1774.380 FEET 0.336 MILES  
BRIDGES-LENGTH 187.000 FEET 0.035 MILES  
EXCEPTIONS-LENGTH 187.000 FEET 0.035 MILES  
NET LENGTH 1587.380 FEET 0.301 MILES

STATE PROJ. NO. 0215-50 (T.H.10 = 062)  
GROSS LENGTH 3141.690 FEET 0.595 MILES  
BRIDGES-LENGTH 0.000 FEET 0.000 MILES  
EXCEPTIONS-LENGTH 0.000 FEET 0.000 MILES  
NET LENGTH 3141.690 FEET 0.595 MILES

END PROJ. S.P. 02-611-26,  
S.P. 114-020-11



PROJECT LOCATION  
ANOKA COUNTY  
METRO DISTRICT

PLAN REVISIONS		
DATE	SHEET NO.	APPROVED BY

MN/DOT SYSTEM I.D. NUMBERS 20217, 20218

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO THE MMUTCD, INCLUDING THE FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS (DATED APRIL 1995).

STOPPING SIGHT DISTANCE BASED ON  
3.5' HEIGHT OF EYE  
0.5' HEIGHT OF OBJECT

GEOMETRICS DESIGN DESCRIPTION

	HANSON BLVD	TH 10 WB RAMP	TH 10 EB RAMP
DESIGN SPEED	40 M.P.H.	40 M.P.H.	40 M.P.H.
EXISTING A.D.T. (1998)	20,600	10,400	5,800
PROJECTED A.D.T. (2018)	27,700	14,000	7,800
FUNCTIONAL CLASSIFICATION	ARTERIAL HIGH DENSITY	FREEWAY RAMP	FREEWAY RAMP
NO. OF TRAFFIC LANES	4	4	2
NO. OF PARKING LANES	0	0	0
ESAL FACTOR	2,524,728	70	2,360,440
R-VALUE	70	70	70

FEDERAL PROJECT NO. 0296(128)

GOVERNING SPECIFICATIONS

THE 1988 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION", AS AMENDED BY THE MAY 2, 1993 SUPPLEMENTAL SPECIFICATIONS, SHALL GOVERN.

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	STATEMENT OF ESTIMATED QUANTITIES
3	TABULATION CHARTS
4	UTILITY TABULATION
5	CONSTRUCTION NOTES & EARTHWORK SUMMARY
6-7	EROSION CONTROL DETAILS
8	TYPICAL SECTIONS
9	EXISTING CONDITIONS & REMOVAL PLAN
10	CONSTRUCTION PLAN
11	MILL AND OVERLAY DETAILS
12-15	TRAFFIC SIGNAL DETAILS
16-17	TRAFFIC SIGNAL SYSTEM "B"
18-19	TRAFFIC SIGNAL SYSTEM "C"
20	INPLACE SIGNAL SYSTEMS "A" & "D" (INTERCONNECT)
21-29	INPLACE SIGNAL SYSTEM PLANS
30-36	SIGNING & STRIPING PLAN
37-42	TRAFFIC CONTROL PLAN

THIS PLAN CONTAINS 42 SHEETS.

DESIGN ENGINEER: 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.

ASSISTANT COUNTY ENGINEER

DATE \_\_\_\_\_ REG. NO. 20235

SIGNAL DESIGN ENGINEER: I HEREBY CERTIFY THAT THESE SIGNAL PLANS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION, THAT THIS PLAN CONFORMS TO THE MMUTCD (EXCEPT WHERE A VARIANCE HAS BEEN GRANTED), AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE \_\_\_\_\_ REG. NO. 22457

APPROVED \_\_\_\_\_ CITY OF COON RAPIDS ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_

APPROVED \_\_\_\_\_ ANOKA COUNTY ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_

RECOMMENDED FOR APPROVAL \_\_\_\_\_ FOR METRO DIVISION \_\_\_\_\_ DATE \_\_\_\_\_

RECOMMENDED FOR APPROVAL \_\_\_\_\_ METRO TRAFFIC ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_

RECOMMENDED FOR APPROVAL \_\_\_\_\_ STATE PRELETTING ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_

OFFICE OF LAND MANAGEMENT APPROVAL \_\_\_\_\_ DIRECTOR, LAND MANAGEMENT \_\_\_\_\_ DATE \_\_\_\_\_

APPROVED \_\_\_\_\_ STATE DESIGN ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_

APPROVED \_\_\_\_\_ METRO ASSISTANT DIVISION ENGINEER-STATE AID: REVIEWED FOR COMPLIANCE WITH STATE AID RULES/POLICY \_\_\_\_\_ DATE \_\_\_\_\_

APPROVED \_\_\_\_\_ APPROVED FOR STATE AID FUNDING: STATE AID ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_

MINNESOTA DEPARTMENT OF TRANSPORTATION  
ANOKA COUNTY, MINNESOTA  
CITY OF COON RAPIDS

TITLE SHEET



RAMP RECONSTRUCTION AND TRAFFIC SIGNAL INSTALLATIONS  
HANSON BOULEVARD (CSAH 78)-BETWEEN NORTHDAL BLVD NORTH & SOUTH JUNCTIONS  
FEDERAL PROJECT NO. 0296(128)  
STATE PROJ. NO. 0215-48, 0215-50  
STATE PROJ. NO. 02-611-26, 114-020-11

FILE NO.  
MNDOT9611  
1  
42

STATEMENT OF ESTIMATED QUANTITIES

CHART NO.	NOTE	ITEM NO.	ITEM	UNIT	TOTAL		S.P. 0215-50		S.P. 0215-48		S.P. 114-020-11		S.P. 02-611-26	
					ESTIMATED	FINAL	ESTIMATED	FINAL	ESTIMATED	FINAL	ESTIMATED	FINAL	ESTIMATED	FINAL
		2021.501	MOBILIZATION	LUMP SUM	1		0.45		0.24		0.13		0.18	
		2031.501	FIELD OFFICE TYPE D	EACH	1		0.45		0.24		0.13		0.18	
		2102.502	PAVEMENT MARKING REMOVAL	LIN FT	550		550							
D		2104.501	REMOVE CURB AND GUTTER	LIN FT	1369		1369							
E	(1)	2104.501	REMOVE SEWER PIPE (STORM)	LIN FT	109		109							
C	(2)	2104.505	REMOVE BITUMINOUS PAVEMENT	SQ YD	357		357							
H		2104.505	REMOVE CONCRETE WALK	SQ YD	195		195							
		2104.509	REMOVE CONCRETE NOSE	EACH	1		1							
		2104.509	REMOVE CONCRETE APRON	EACH	1		1							
E		2104.509	REMOVE DRAINAGE STRUCTURE	EACH	5		5							
A		2104.513	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LIN FT	1161		1161							
		2104.523	SALVAGE SIGN TYPE C	EACH	70		70							
		0104.607	HAUL SALVAGED MATERIAL	LUMP SUM	1		1							
K		2105.501	COMMON EXCAVATION	CU YD	1300 (P)		1300(P)							
K		2105.522	SELECT GRANULAR B-C-RROW (LV)	CU YD	3301		3301							
	(4)	2130.501	WATER	M GAL	5		5							
F		2211.503	AGGREGATE BASE (CV) CLASS 5A	CU YD	462		462							
B	(5)	2232.501	MILL BITUMINOUS SURFACE	SQ YD	18388		11014					7374		
F		2340.508	TYPE 41 WEARING COURSE MIXTURE	TON	2113		1403					710		
F		2340.510	TYPE 41 BINDER COURSE MIXTURE	TON	257		257							
F		2340.514	TYPE 31 BASE COURSE MIXTURE	TON	425		425							
F		2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GALLON	1696		1180					516		
E		2501.515	12" RC PIPE APRON	EACH	6		6							
E	(6)	2503.511	12" RC PIPE SEWER DESIGN 3006 CL III	LIN FT	73		73							
E		2506.501	CONST DRAINAGE STRUCTURE DESIGN G	LIN FT	8.5		8.5							
E		2506.501	CONST DRAINAGE STRUCTURE DESIGN H	LIN FT	7.2		7.2							
E	(3)	2506.516	CASTING ASSEMBLY	EACH	5		5							
H		2521.501	4" CONCRETE WALK	SQ FT	1642		1642							
G		2531.501	CONCRETE CURB & GUTTER DESIGN B624	LIN FT	498		498							
G		2531.501	CONCRETE CURB & GUTTER DESIGN D424	LIN FT	627		627							
		0531.602	PEDESTRIAN CURB RAMP	EACH	2		2							
		0531.602	CONC MEDIAN NOSE DESIGN 7113	EACH	1		1							
		2554.509	GUIDE POST TYPE B	EACH	6		6							
		0563.601	TRAFFIC CONTROL STAGE 1	LUMP SUM	1		0.45		0.24		0.13		0.18	
		0563.601	TRAFFIC CONTROL STAGE 2A	LUMP SUM	1		0.45		0.24		0.13		0.18	
		0563.601	TRAFFIC CONTROL STAGE 2B	LUMP SUM	1		0.45		0.24		0.13		0.18	
		0563.601	TRAFFIC CONTROL STAGE 2C	LUMP SUM	1		0.45		0.24		0.13		0.18	
		0563.601	TRAFFIC CONTROL STAGE 2D	LUMP SUM	1		0.45		0.24		0.13		0.18	
		0563.602	PORTABLE CHANGEABLE MESSAGE SIGN	UNIT DAY	10		10							
		0563.603	ONE-WAY RAISED PAVT MARKER TEMP	EACH	115		115							
		0563.603	REPLACEMENT ONE-WAY RPM TEMP	EACH	21		21							
		2564.531	F & I SIGN PANELS TYPE C	SQ FT	388		388							
		0564.602	INSTALL SIGN TYPE C	EACH	3		3							
		0564.602	PVMT MESSAGE(LT ARROW) POLY PREF	EACH	4		4							
		0564.602	PVMT MESSAGE(LT/THRU ARROW) POLY PREF	EACH	2		2							
		0564.602	PVMT MESSAGE(RT ARROW) POLY PREF	EACH	6		6							
		0564.603	4" SOLID LINE WHITE - PAINT	LIN FT	9100		9100							
		0564.603	4" BROKEN LINE WHITE - PAINT	LIN FT	550		550							
		0564.603	4" SOLID LINE YELLOW - PAINT	LIN FT	5000		5000							
		0564.603	8" SOLID LINE WHITE - PAINT	LIN FT	4000		4000							
		0564.603	24" SOLID LINE WHITE-POLY PREFORM	LIN FT	130		130							
		0564.603	36" SOLID LINE WHITE-POLY PREFORM	LIN FT	900		900							
		2565.511	FULL T ACT T CONTROL SIGNAL SYSTEM "B"	SIG SYS	1			0.50		0.25		0.25		
		2565.511	FULL T ACT T CONTROL SIGNAL SYSTEM "C"	SIG SYS	1			0.50		0.25		0.25		
J		0565.601	EMERGENCY VEHICLE PREEMPTION SYSTEM "B"	LUMP SUM	1			0.50		0.50				
J		0565.601	EMERGENCY VEHICLE PREEMPTION SYSTEM "C"	LUMP SUM	1			0.50		0.50				
J		0565.601	TRAFFIC CONTROL INTERCONNECT	LUMP SUM	1			0.50		0.25		0.25		
J	(10)	0565.602	LOOP DETECTOR 6'x6'	EACH	4		4							
J	(7)	2573.501	BALE CHECK	EACH	12		12							
I	(8)	2573.502	SILT FENCE, HEAVY DUTY	LIN FT	1079		1079							
I		2575.501	SEEDING	ACRE	1		1							
I		2575.502	SEED MIXTURE 900	POUND	45		45							
I		2575.505	SODDING TYPE LAWN	SQ YD	674		674							
I		2575.511	MULCH MATERIAL TYPE 1	TON	2		2							
I		2575.519	DISK ANCHORING	ACRE	1		1							
I		2575.524	TURF ESTABLISHMENT BLANKET TYPE STRAW	SQ YD	629		629							
I	(9)	2575.532	COMMERCIAL FERT ANALYSIS 10-10-10	POUND	500		500							
		2580.501	TEMPORARY LANE MARKING	ROAD STA	40		40							
		2581.501	4" REMOVABLE PREFORMED PLASTIC MARKING	LIN FT	1200		1200							

CHART	SHEET NO.	DESCRIPTION
A	3	SAWING BITUMINOUS PAVEMENT
B	3	MILL BITUMINOUS SURFACE
C	3	BITUMINOUS PAVEMENT REMOVAL
D	3	CURB AND GUTTER REMOVAL
E	3	DRAINAGE TABULATION CHART
F	3	BITUMINOUS AND AGGREGATE BASE SUMMARY
G	3	CONCRETE CURB AND GUTTER
H	3	CONCRETE WALK
I	3	TURF ESTABLISHMENT
J	3	BALE CHECK
K	4	EARTHWORK SUMMARY
L	4	DRAINAGE CASTING SCHEDULE

PLATE NO.	DESCRIPTION
3000L	REINFORCED CONCRETE PIPE
3006G	GASKET JOINT FOR R.C. PIPE
3007C	SHEER REINFORCEMENT FOR PRECAST DRAINAGE STRUCTURES
3100G	CONCRETE APRON FOR REINFORCED CONCRETE PIPE
3145E	CONCRETE PIPE TIES
4006L	MANHOLE OR CATCH BASIN
4010H	CONC. SHORT CONE & ADJUSTING RING
4011E	PRECAST CONCRETE BASE
4132F	CATCH BASIN FRAME CASTING
4154B	CATCH BASIN GRATE CASTING
7036D	PEDESTRIAN CURB RAMP
7100G	CONCRETE CURB AND GUTTER (DESIGN B)
7102I	CONCRETE CURB AND GUTTER (DESIGN D)
7111J	INSTALLATION AND REINFORCEMENT OF CATCH BASIN CASTING
7113A	CONCRETE APPROACH NOSE DETAIL
8150B	INSTALLATION OF CULVERT MARKERS
9102D	TURF ESTABLISHMENT AREAS

SEE TRAFFIC SIGNAL PLAN SHEETS FOR ADDITIONAL STANDARD PLATES

2340	TYPE 41 PLANT MIXED WEAR & BINDER COURSE: BIT. MIXTURE 110 LBS/SQ.YD. PER 1" THICKNESS
2340	TYPE 31 PLANT MIXED BASE COURSE: BIT. MIXTURE 110 LBS/SQ.YD. PER 1" THICKNESS
2357	BITUMINOUS MIXTURE FOR TACK COAT: 0.07 GALS PER SQ.YD. PER LAYER APPLIED
2575	COMMERCIAL FERTILIZER, ANALYSIS 10-10-10: 500 LBS./ACRE ON ALL SEED AND SOD AREAS
2575	MULCH MATERIAL, TYPE 1: 2 TONS PER ACRE
2575	ROADSIDE SEEDING BASED ON HORIZONTAL MEASUREMENT: +10% SEED MIXTURE NO. 900: 45 LBS. PER ACRE

- NOTES:
- INCLUDES ALL TYPES AND SIZES.
  - INCLUDES ALL BITUMINOUS SURFACING REGARDLESS OF DEPTH AND WIDTH. PAVEMENT ASSUMED TO BE 6 3/4" IN DEPTH. CONTRACTOR SHALL MAKE OWN DETERMINATION OF ACTUAL PAVEMENT DEPTH.
  - INCLUDES ENTIRE CASTING ASSEMBLY AT EACH STRUCTURE.
  - FOR DUST CONTROL AS DIRECTED BY THE ENGINEER.
  - MILLING 3"± DEEP IN RAMP GUTTERS, 1.5" DEEP ON CSAH 11, AND 4.5"± DEEP ON RAMPS. SEE TYPICAL SECTIONS FOR DETAILS.
  - TIE ALL JOINTS.
  - FOR EROSION CONTROL AT DRANAGE STRUCTURES, AS DIRECTED BY THE ENGINEER.
  - FOR EROSION CONTROL AT TOE OF SLOPES.(SEE SHEET 9)
  - ANALYSIS 10-10-10 OR APPROVED ALTERNATE.
  - BID ITEM TO REPLACE LOOPS DAMAGED BY MILLING OPERATIONS.

STATEMENT OF ESTIMATED QUANTITIES

REVISIONS DATE BY

**CURB AND GUTTER REMOVAL** (D)

STATION - STATION	LOCATION	DESCRIPTION	LIN.FT.
13+81.00 - 17+51.00	LT	LSB CSAH 11 RTL	375
10+20.00 - 17+10.00	LT	WB EXIT RAMP (591' D418, 122' B624)	964
RAMP-A, RAMP-D	RT	FOR STORM CB REMOVAL AND REPLACEMENT	30
TOTAL			1369

**BITUMINOUS AND AGGREGATE SUMMARY** (F)

STATION - STATION	TYPE 31 BASE			TYPE 41 BINDER			TYPE 41 WEAR			TACK COAT (GALLON)	AGGREGATE BASE CLASS 5		
	DEPTH (IN)	AREA (SQ.YDS.)	WEIGHT (TON)	DEPTH (IN)	AREA (SQ.YDS.)	WEIGHT (TON)	DEPTH (IN)	AREA (SQ.YDS.)	WEIGHT (TON)		DEPTH (IN)	AREA (SQ.YDS.)	WEIGHT (CU.YDS.)
RAMP C/L 10+20.01 - 17+11.56	3.5	1759	339	2	1759	193	1.5	1759	169	246	6	2099	350
SUB-TOTAL =			1759	339	1759	193	1.5	1759	169	246	6	2099	350
CSAH 11 LSB 13+80.83 - 17+50.75	3	521	86	2.25	521	64	1.5	521	50	73	6	674	112
SUB-TOTAL =			521	86	521	64	1.5	521	50	73	6	674	112
LSB CSAH 11-ROBINSON DR. TO BR.	1.5	2646	255				1.5	2646	255	185			
LNB CSAH 11-ROBINSON DR. TO BR.	1.5	1662	160				1.5	1662	160	116			
RAMP "C"(EB EXIT RAMP-SO.OF BR.)	1.5	3338	321				1.5	3338	321	234			
RAMP "D"(EB ENT. RAMP-SO.OF BR.)	1.5	3304	318				1.5	3304	318	231			
LSB CSAH 11- (BR.TO N.LIMIT)	1.5	1781	171				1.5	1781	171	125			
LNB CSAH 11- (BR.TO N.LIMIT)	1.5	1285	124				1.5	1285	124	90			
RAMP "B"(WB EXIT RAMP-NO.OF BR.)	1.5	3163	304				1.5	3163	304	221			
RAMP "A"(WB ENT. RAMP-NO.OF BR.)	1.5	2505	241				1.5	2505	241	175			
SUB-TOTAL =					19684	1894				1377			
TOTALS =			2280	425	2280	257	21964	2113	696		2773	462	

**CONCRETE WALK** (H)

STATION - STATION	LOC	REMOVAL		CONSTRUCTION		REMARKS
		WALK SQ.YD.	PED.RAMP EACH	WALK SQ.FT.	WALK SQ.FT.	
14+25.00 - 17+52.38	LT	17		1642		REMOVE AND REPLACE CSAH 11 RIGHT TURN LANE - LT
14+25	LT	178	1			LSB SIDEWALK JCT WITH TH 10 WB ENT RAMP LT
16+84	67' RT		1			CONSTRUCT PED RAMP @ WB EXIT RAMP
TOTAL		195	2	1642		

**DRAINAGE TABULATION CHART** (E)

STRUCT NO.	STA.	LOCATION		REMARKS	MH OR CB	EXISTING			NEW CONSTRUCTION						FURNISH & INSTALL				
		ALIGN.	LT./RT.			PIPE LIN.FT.	STRUCT. EA.	APRON EA.	STRUCT. DESIGN.	F.& I. CAST. ASSY.	PAY HEIGHT LIN.FT.	TOP CAST. ELEV.	OUTLET ELEV.	DRAINS TO EXIST. NEW	GRADE IN %	12" RCP LIN.FT.	12" R.C.P. APRON EACH	CLASS OF PIPE	SOD SQ.YD.
1	10+49	RAMP-B	8.72' RT		CB														
2	10+49	RAMP-B	2		APRON														
3	13+06	RAMP-B	34.41' RT		CB														
4	13+06	RAMP-B	4		APRON														
5	10+49	RAMP-B	8.1' RT		CB	14	1												
6	10+48	RAMP-B	21' RT	APRON OUTLET	APRON														
7	12+49	RAMP-B	8.1' RT		CB	34	1												
8	12+48	RAMP-B	41' RT	APRON OUTLET	APRON														
9	8+05	RAMP-B	41' RT	NO CONSTRUCTION REQUIRED	APRON														
10	8+52	RAMP-B	41' RT	NO CONSTRUCTION REQUIRED	APRON														
DRAINAGE STRUCTURE RECONSTRUCTION - RAMP A,C,D																			
RAMP-A																			
21	1+91	RAMP-A	10.09' LT	NO CONSTRUCTION REQUIRED	CB														
22	2+79	RAMP-A	10.64' LT		CB	23	1												
23	2+79	RAMP-A	35.6' LT		APRON														
24	3+52	RAMP-A	32.4' LT	REMOVE & REPLACE APRON	APRON														
25	5+24	RAMP-A	11.89' LT		CB	22	1												
26	5+24	RAMP-A	34.9' LT		APRON														
RAMP-C																			
31	6+71	RAMP-C	11.87' RT	NO CONSTRUCTION REQUIRED	CB														
32	7+18	RAMP-C	11.69' RT	NO CONSTRUCTION REQUIRED	CB														
33	9+18	RAMP-C	11.87' RT	NO CONSTRUCTION REQUIRED	CB														
34	11+19	RAMP-C	11.84' RT	NO CONSTRUCTION REQUIRED	CB														
RAMP-D																			
41	5+91	RAMP-D	10.96' RT	NO CONSTRUCTION REQUIRED	CB														
42	7+91	RAMP-D	7.70' RT	NO CONSTRUCTION REQUIRED	CB														
43	8+71	RAMP-D	8.41' RT		CB	16	1												
44	8+71	RAMP-D	34.9' LT		APRON														
TOTAL =						109	5	1				5	15.7				73	6	54

**SAWING BITUMINOUS PAVEMENT** (A)

STATION - STATION	LOCATION	LIN. FT.
13+70.46 - 17+50.75	LSB CSAH 11 RIGHT TURN LANE CONST	419
10+20.01 - 17+09.15	TH 10 WB EXIT RAMP CONST	742
TOTAL		1161

**MILL BITUMINOUS SURFACE** (B)

STATION - STATION	LOC.	DESCRIPTION	SQ. YD.
13+70.46 - 14+53.67	LSB	CSAH 11 RTL	128
CSAH 11	LSB	ROBINSON DR. - BR	2646
CSAH 11	LNB	ROBINSON DR. - BR	1662
RAMP "C"	EB	SOUTH SIDE OF BR	3338
RAMP "D"	EB	SOUTH SIDE OF BR	3304
CSAH 11	LSB	NORTH SIDE OF BRIDGE	1781
CSAH 11	LNB	NORTH SIDE OF BRIDGE	1285
RAMP "B"	WB	CSAH 11 - N SIDE OF BR	3069
RAMP "A"	WB	CSAH 11 - N SIDE OF BR	1175
TOTAL			18,388

**BITUMINOUS PAVEMENT REMOVAL** (C)

STATION - STATION	LOCATION	DESCRIPTION	SQ.YDS.
13+72 - 17+50	11.5' - 45' LT.	CSAH 11 LSB ALIGN. RTL	178
10+20 - 17+15	11.5' - 140' RT.	TH. 10 RAMP-B ALIGNMENT	157
12+84	14' RT.	REMOVAL FOR MEDIAN NOSE RECONSTRUCTION	22
TOTAL			357

**BALE CHECK** (J)

STATION - STATION	LOCATION	EACH	REMARKS
RAMP'S A, B, D	RT	5	FOR USE AROUND DRAINAGE STRUCTURES
10+20 - 15+00	RAMP-B RT	7	USE AS NEEDED FOR DIT.VELOCITY CHECKS
TOTAL		12	

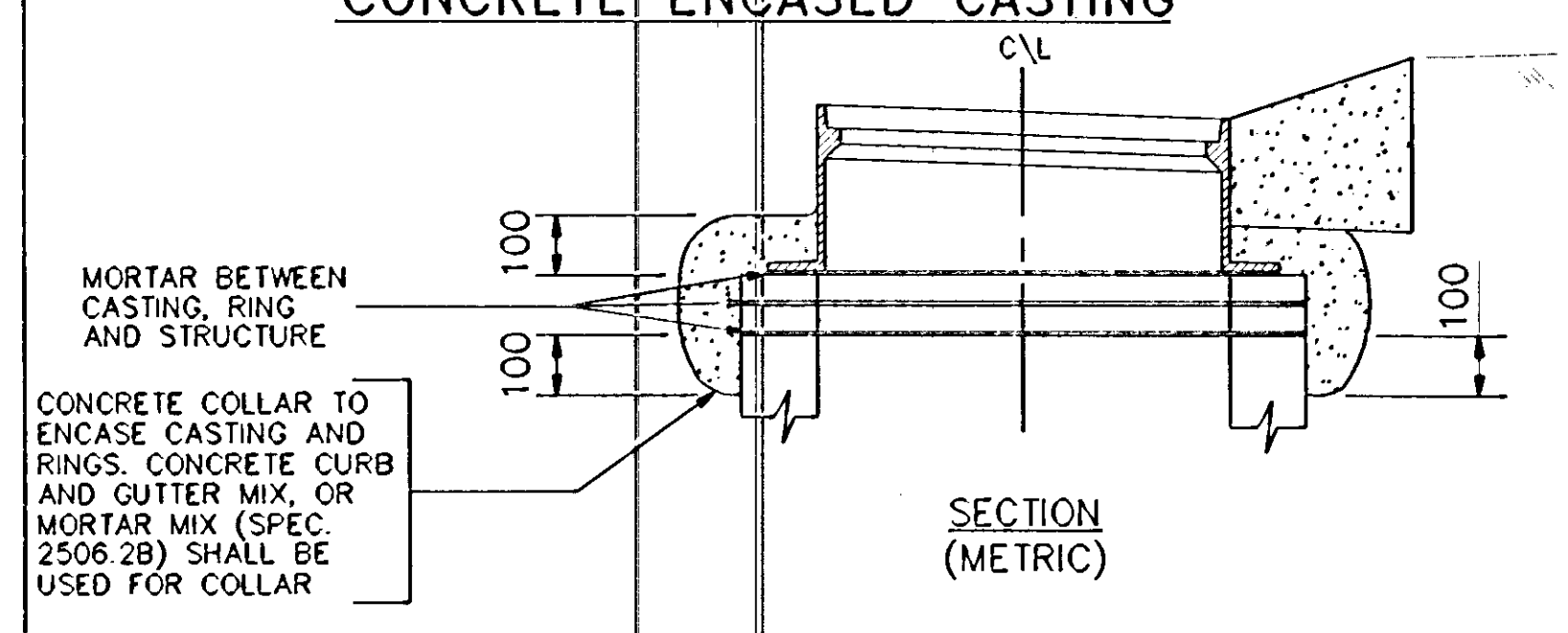
**CONCRETE CURB AND GUTTER** (G)

STATION - STATION	LOCATION	DESCRIPTION	B624 LIN. FT.	D424 LIN. FT.
10+20.01 - 16+15.21	RT	WB EXIT RAMP		597
16+15.21 - 17+09.15	RT	WB EXIT RAMP	122	
13+80.83 - 17+50.75	LT	LSB CSAH 11 RTL	376	
RAMP-A, RAMP-D	RT	FOR REPLACEMENT AT STORM CB LOC.		30
TOTAL			498	627

**TURF ESTABLISHMENT** (I)

STATION - STATION	LOC	SODDING SQ. YD.	SEEDING ACRES	SEED POUND	MULCH TON	DISK ANCHORING ACRE	FERTILIZER POUND	STRAW BLANKET SQ. YD.
(LSB CSAH 11) 13+84 - 17+57	LT.	460		5	0.2	.1	55	629
(LSB CSAH 11) 13+84 - 17+57	LT.							
(RAMP) 10+20 - 17+10	RT.	160		27	1.2	.6	275	
(RAMP) 10+20 - 17+10	RT.							
APRON OUTLETS (SEE DRAINAGE)		54		45	2	1	500	629
TOTALS =		674	1	45	2	1	500	629

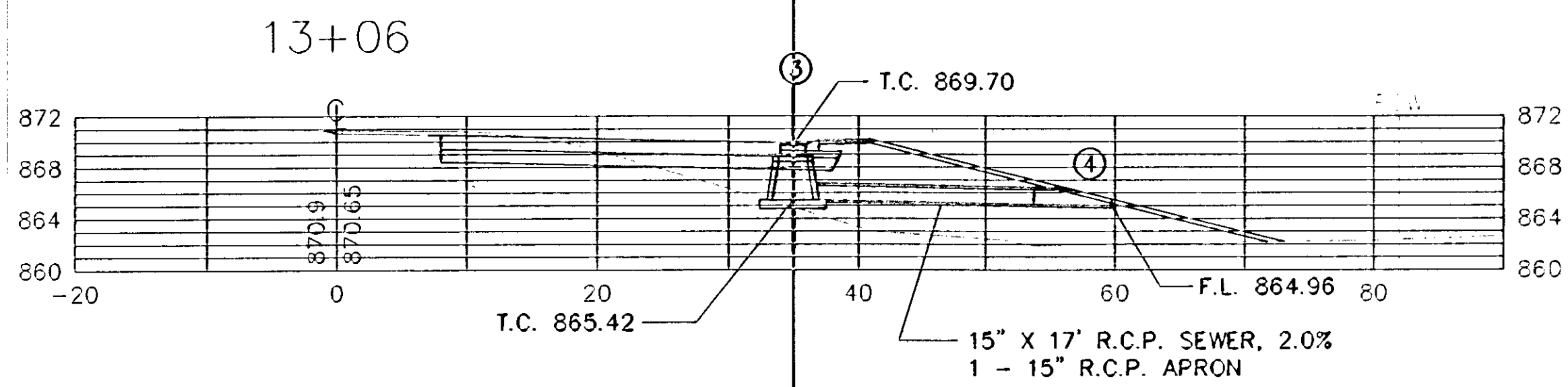
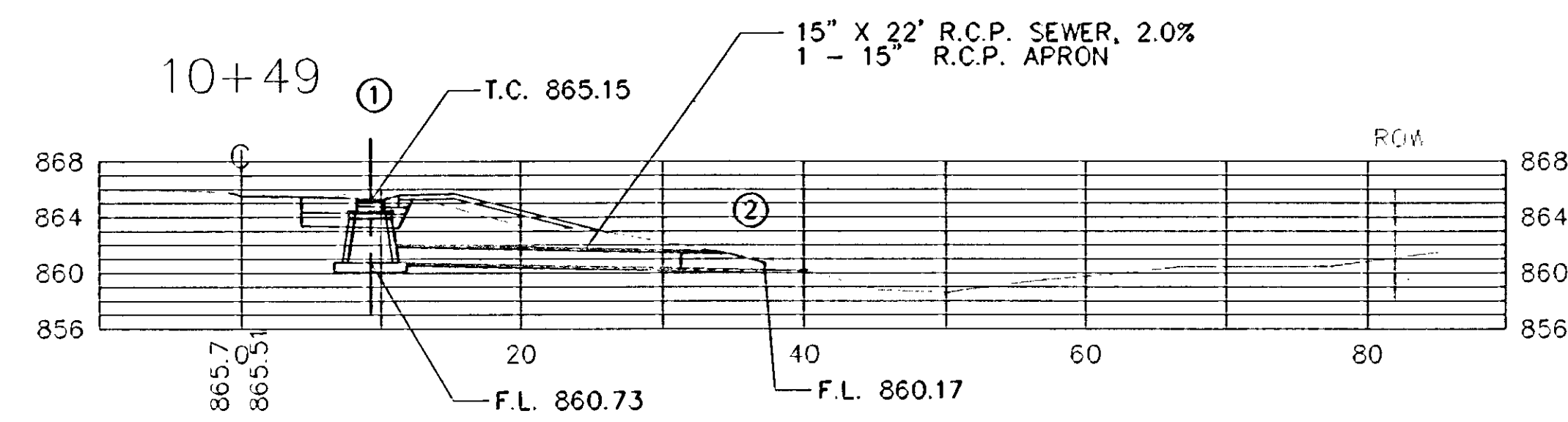
**CONCRETE ENCASED CASTING**



**DRAINAGE CASTING SCHEDULE** (L)

ASS'Y TYPE	NO REQ'D	FRAME CASTING	GRATE CASTING
B-9	4	805	816
TOTAL			

**STORM SEWER CONST. DETAILS**



**TABULATION CHARTS**

- SAWING BITUMINOUS PAVEMENT
- MILL BITUMINOUS SURFACE
- BITUMINOUS PAVEMENT REMOVAL
- CURB & GUTTER REMOVAL
- BITUMINOUS AND AGGREGATE BASE SUMMARY
- CONCRETE CURB AND GUTTER
- CONCRETE SIDEWALK
- TURF ESTABLISHMENT
- BALE CHECK
- DRAINAGE TABULATION CHART
- DRAINAGE CASTING SCHEDULE



# EARTHWORK SUMMARY (K)

Fed. Project No. \_\_\_\_\_

## EXCAVATION (EV)

RAMP CONST.	}	REGULAR . . . . . 0 CU.YD.
		SUBCUT . . . . . 376 CU.YD.
		TOPSOIL . . . . . 262 CU.YD.
COMMON EXCAVATION ①	}	REGULAR . . . . . 377 CU.YD.
		SUBCUT . . . . . 180 CU.YD.
		TOPSOIL . . . . . 105 CU.YD.
CSAH 11 LSB RTL	}	REGULAR . . . . . 377 CU.YD.
		SUBCUT . . . . . 180 CU.YD.
		TOPSOIL . . . . . 105 CU.YD.

## EMBANKMENT (CV)

GRANULAR . . . . . 3,547 CU.YD.	}	RAMP CONST. <u>3513</u> CU. YD.
		CSAH 11 LSB RTL <u>34</u> CU. YD.
SUBCUT . . . . . 556 CU.YD.	}	RAMP CONST. <u>376</u> CU. YD.
		CSAH 11 LSB RTL <u>180</u> CU. YD.
TOPSOIL . . . . . 392 CU.YD.	}	IMPORT . . . . . 80 CU.YD.
		ONSITE . . . . . 312 CU.YD.
	}	RAMP CONST. <u>223</u> CU. YD.
		CSAH 11 LSB RTL <u>89</u> CU. YD.
GRANULAR BORROW . . . . . 3,301 CU.YD.		

## BALANCE

TOPSOIL  
TOPSOIL DRESSING (CV) - [TOPSOIL STRIPPING (EV) x SHRINKAGE FACTOR] = EXCESS(-) OR SHORTAGE(+)   
(367 x 0.85) - 392 = -80 CU.YD. SHORTAGE (SEE NOTE 22.)

TOPSOIL BORROW  
SHORTAGE x SWELL FACTOR = BORROW (LV)   
3,317 x 1.3 = 4,312 CU.YD. (LV)

GRANULAR MATERIAL  
GRANULAR (CV)+SUBCUT+SUBGRADE - [REGULAR EXCAVATION (EV) x SHRINKAGE FACTOR] - [SUBCUT+SUBGRADE EXCAVATION x SHRINKAGE FACTOR] = EXCESS(-) OR SHORTAGE(+)   
3,547+556 - [377 x 0.80] - [556 x 0.90] = 3,301 CU.YD. SHORTAGE   
EXCESS (LV) = EXCESS (CV) x SWELL FACTOR   
3,301 x 1.20 = 3,961 CU.YD. (LV) EXCESS (SEE NOTE 23.)

SOIL FACTORS: (1) REGULAR GRADING AND TOPSOIL DRESSING (EV TO CV): 80% SHRINKAGE  
(2) SUBCUT COMPACTION AND SUBGRADE EXCAVATION (EV TO CV): 90% SHRINKAGE  
(3) SELECT GRANULAR BORROW (CV TO LV): 120% SWELL  
(4) TOPSOIL BORROW (CV TO LV): 130% SWELL

**NOTE:**

① EXCAVATION QUANTITIES ARE BASED ON ALL EXIST BITUMINOUS OR CONCRETE AND BASE MATERIAL HAVING BEEN REMOVED DURING REMOVAL OF THE EXISTING ROAD SURFACE AND THEY ARE NOT INCLUDED IN THE EXCAVATION QUANTITIES.

**SOIL FACTORS:**

- 1.) REGULAR GRADING AND TOPSOIL DRESSING (EV TO CV): 85% SHRINKAGE
- 2.) SUBCUT COMPACTION (EV TO CV): 90% SHRINKAGE

## SOILS AND CONSTRUCTION NOTES

1. TOP OF PROFILE GRADE IS DEFINED AS THE TOP OF THE BITUMINOUS WEARING COURSE.
2. IN FILL AREAS, THE SUBGRADE SHALL BE CONSTRUCTED WITH SELECTED GRADING MATERIAL.
3. SELECTED GRADING MATERIALS SHALL CONSIST OF SELECT GRANULAR MATERIALS.
4. GRANULAR MATERIAL, REGARDLESS OF SOURCE, SHALL MEET THE REQUIREMENTS OF SPEC. 3149.2A.
5. SELECT GRANULAR MATERIAL SHALL MEET THE REQUIREMENTS OF SPEC 3149.2B.
6. COMPACTION OF THE GRADING PORTION OF THIS PROJECT SHALL BE BY THE "QUALITY COMPACTION METHOD" WITH THE EXCEPTION OF CULVERT AND STORM SEWER TRENCHES WHICH SHALL BE COMPACTED BY THE "SPECIFIED DENSITY METHOD".
7. TEST ROLLING WILL NOT BE REQUIRED.
8. BITUMINOUS AND/OR CONCRETE ITEMS REMOVED BY CONSTRUCTION SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL EITHER BE RECYCLED OR DISPOSED OF IN ACCORDANCE WITH THE REQUIREMENTS OF 2104.3C3 WITH NO DIRECT COMPENSATION MADE THEREFORE.
9. DISPOSITION OF EXCAVATED MATERIAL SHALL BE IN ACCORDANCE WITH SPEC. 2105.3D WITH NO DIRECT COMPENSATION MADE THEREFORE.
10. WHERE MATCHING INTO THE INPLACE ROADWAY AT THE ENDS OF CONSTRUCTION, CUT VERTICALLY TO THE TOP OF THE GRADING SUBGRADE AND THEN AT A 20:1 TAPER TO THE BOTTOM OF THE RECOMMENDED SUBGRADE EXCAVATION.
11. WHERE CONNECTING NEW SURFACING TO AN INPLACE PAVEMENT, THE EXCAVATION SHALL BE BACKFILLED PROMPTLY TO AVOID UNDERMINING THE INPLACE PAVEMENT.
12. USE TACK COAT BETWEEN ALL BITUMINOUS MIXTURES PRIOR TO PLACING BITUMINOUS MIXTURES AND PRIOR TO PLACING ANY BITUMINOUS MIXTURES ON EXISTING CONCRETE OR BITUMINOUS SURFACES. THE BITUMINOUS TACK COAT MATERIAL SHALL BE APPLIED AT A UNIFORM RATE OF 0.07 TO 0.10 GALLONS PER SQUARE YARD BETWEEN BITUMINOUS LAYERS. THE APPLICATION RATES ARE FOR UNDILUTED EMULSIONS (AS SUPPLIED FROM THE REFINERY); ASPHALT EMULSION MAY BE FURTHER DILUTED IN THE FIELD IN ACCORDANCE WITH SPEC. 2357.
13. COMPACTION OF THE BITUMINOUS BASE, BINDER, AND WEAR SHALL BE BY THE "MODIFIED SPECIFIED DENSITY METHOD".
14. COMPACTION OF THE AGGREGATE BASE LAYERS SHALL BE BY THE "SPECIFIED DENSITY METHOD".
15. IN AREAS TO BE DISTURBED BY CONSTRUCTION, STRIP AND RE-USE AS SLOPE DRESSING ALL TOPSOIL AND INPLACE SLOPE DRESSING. REFER TO THE CROSS-SECTIONS FOR THE LIMITS OF TOPSOIL STRIPPING. GENERAL DEPTHS OF TOPSOIL LAYER ARE ASSUMED TO BE 4 INCHES.
16. SLOPE DRESSING ON THIS PROJECT IS DEFINED AS THE TOPSOIL OR OTHER SOIL PLACED DURING CONSTRUCTION TO PROVIDE A MEDIUM FOR ESTABLISHING TURF.
17. PLACE A MINIMUM OF 4 INCHES TOPSOIL OR SLOPE DRESSING ON ALL AREAS DISTURBED BY CONSTRUCTION AND SCHEDULED FOR PERMANENT TURF ESTABLISHMENT. FERTILIZE WITH COMMERCIAL FERTILIZER, ANALYSIS 10-10-10, AT A RATE OF 500 POUNDS PER ACRE, OR EQUIVALENT.
18. ON ALL DISTURBED AREAS, USE MIXTURE 900 SEED WITH TYPE 1 MULCH, AND DISK ANCHORING, UNLESS SPECIFIED FOR SOD.
19. SOD ALL PERMANENT BOULEVARD AREAS, AND DISTURBED LAWNS.
20. ALL SOD UTILIZED WITHIN THE PROJECT LIMITS SHALL MEET THE REQUIREMENTS OF SPEC. 3878.2A (LAWN AND BOULEVARD SOD).
21. EXISTING STABILIZED SUBGRADE MUST BE PULVERIZED PRIOR TO USE AS EMBANKMENT MATERIAL.
22. GEOTEXTILE FABRIC SHALL BE UTILIZED, WHEN DIRECTED BY THE ENGINEER, IN AREAS WHERE THE SUBCUT AND SUBGRADE EXCAVATION OPERATIONS ENCOUNTER UNSUITABLE UNDERLYING SUBSOILS. THE FABRIC SHALL BE PLACED AND MEET THE REQUIREMENTS AS PROVIDED IN THE SPECIAL PROVISIONS.
23. EXCESS MUCK EXCAVATION TO BE DISPOSED OF BY THE CONTRACTOR OUTSIDE OF THE RIGHT-OF-WAY LIMITS AS APPROVED BY THE ENGINEER.
24. BITUMINOUS REMOVAL QUANTITY BASED ON 7" BITUMINOUS SURFACING AND STABILIZED BASE AND 6" AGGREGATE BASE. CONTRACTOR SHALL INVESTIGATE AND MAKE THEIR OWN DETERMINATION OF ACTUAL PAVEMENT DEPTH.

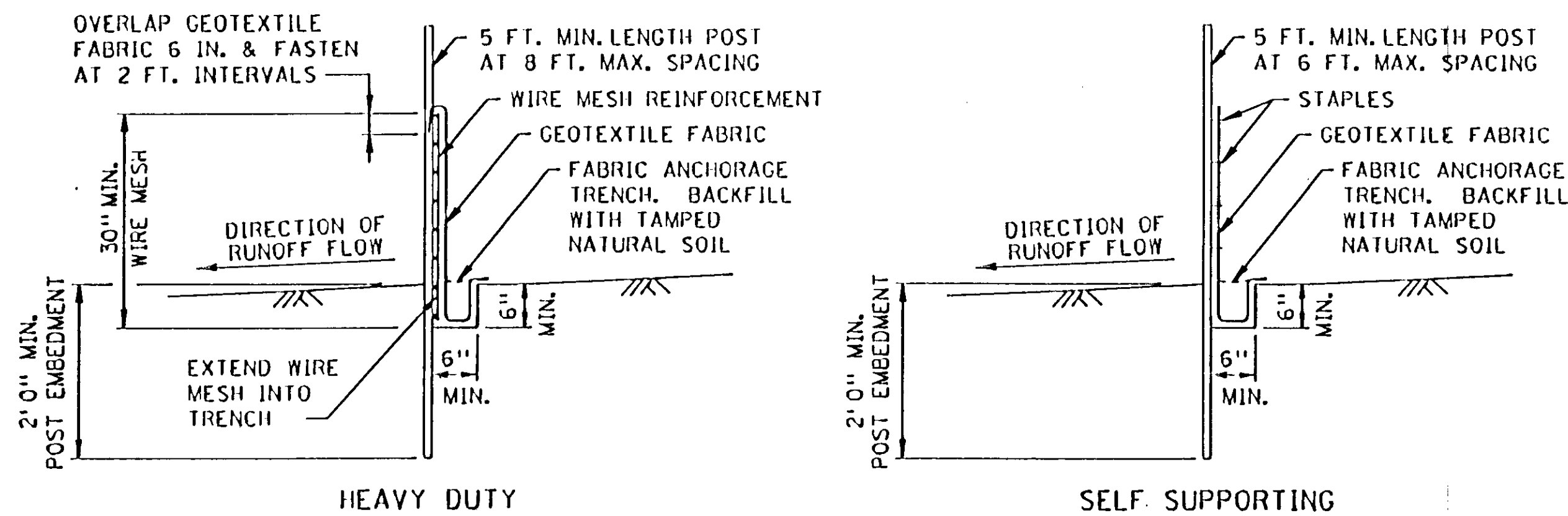
## EARTHWORK SUMMARY AND CONSTRUCTION NOTES

Sheet No. 5 of 42 Sheets

CERTIFIED BY \_\_\_\_\_ P.E. REG NO. \_\_\_\_\_ 19 \_\_\_\_\_ S.P. S.P. 0215-48, S.P. 02-611-26, S.P. 0215-50, S.P. 114-020-11 S.A.P. \_\_\_\_\_ C.P. \_\_\_\_\_

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REVISIONS	DATE	BY

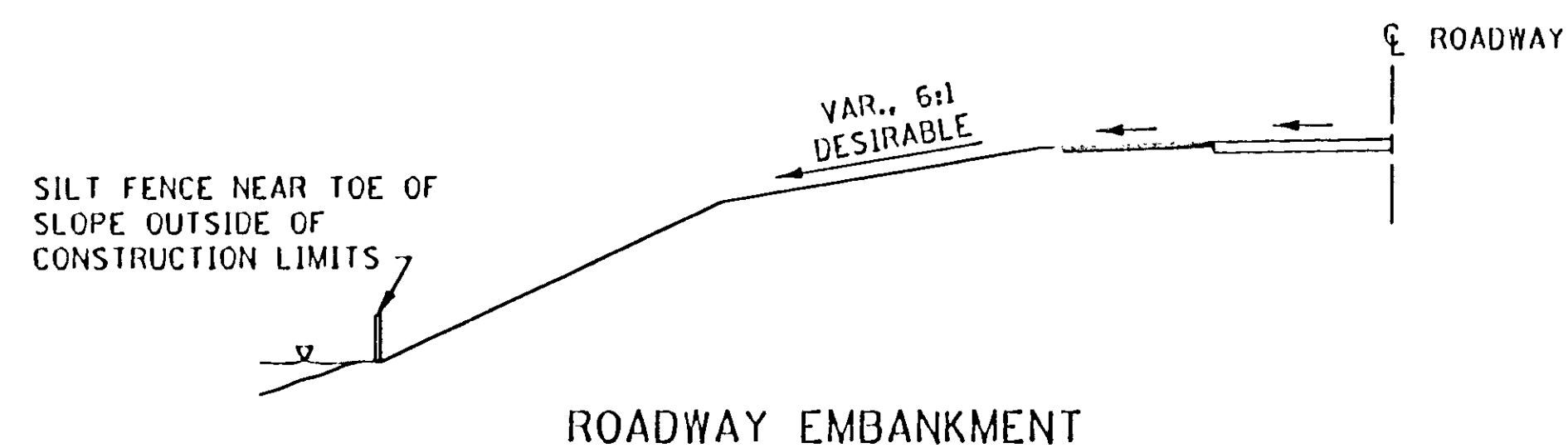


HEAVY DUTY

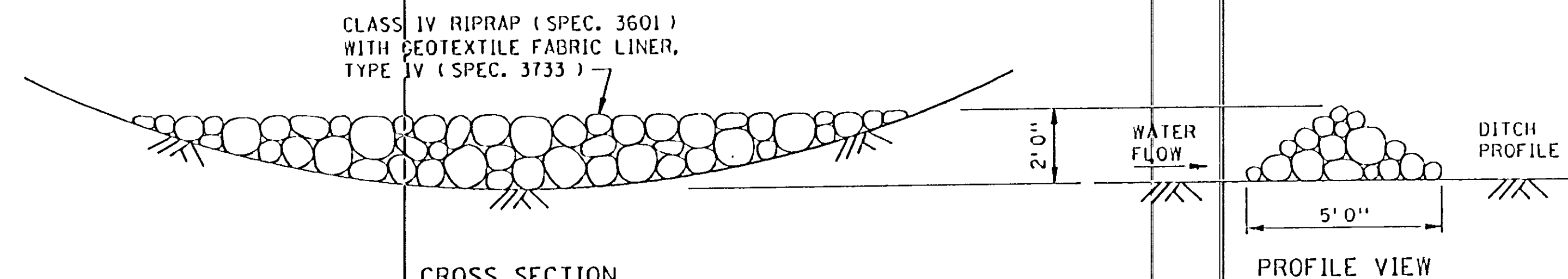
SELF-SUPPORTING

**SILT FENCE DETAILS**  
TO PROTECT AREAS FROM SHEET FLOW  
(SEE SPEC. 3886)

DESIGN CRITERIA:  
MAXIMUM CONTRIBUTING AREA: 3 ACRES



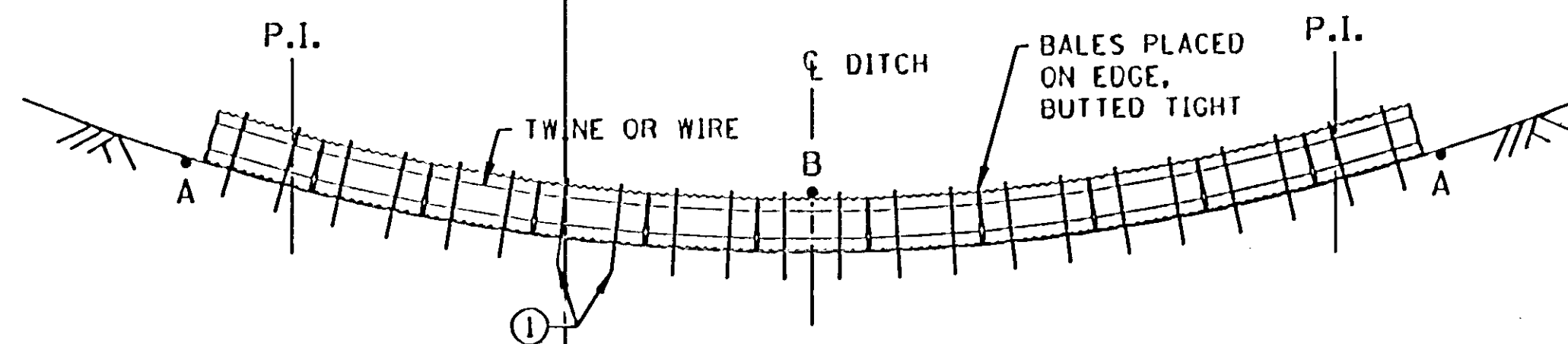
ROADWAY EMBANKMENT



CROSS SECTION

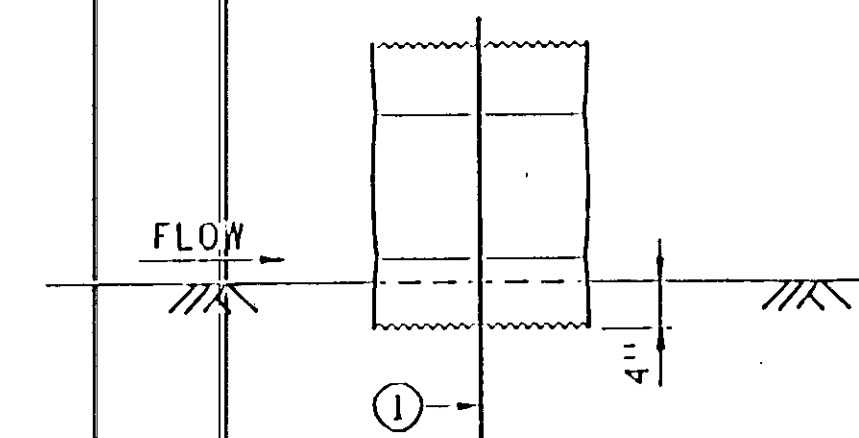
PROFILE VIEW

ROCK DITCH CHECK

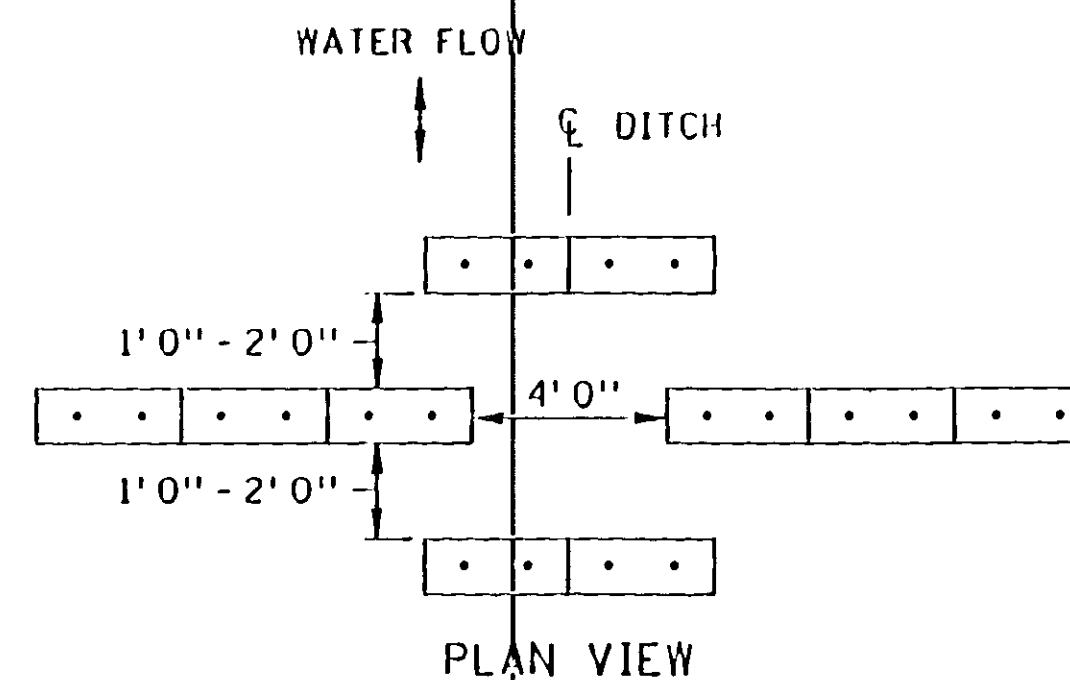


NOTE:  
POINT A MUST BE HIGHER THAN POINT B

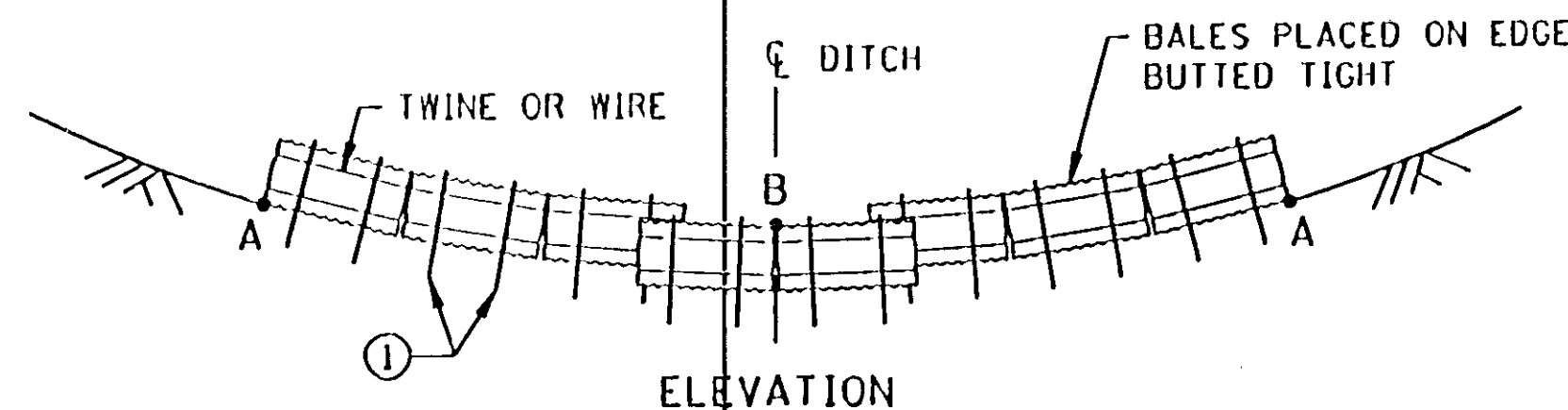
BALE DITCH SEDIMENT CHECK



BALE CHECK DETAIL



PLAN VIEW



ELEVATION

NOTE:  
POINT A MUST BE HIGHER THAN POINT B

**BALE DITCH VELOCITY CHECKS**  
(WILL REQUIRE A MINIMUM OF 10 BALES PER SITE)

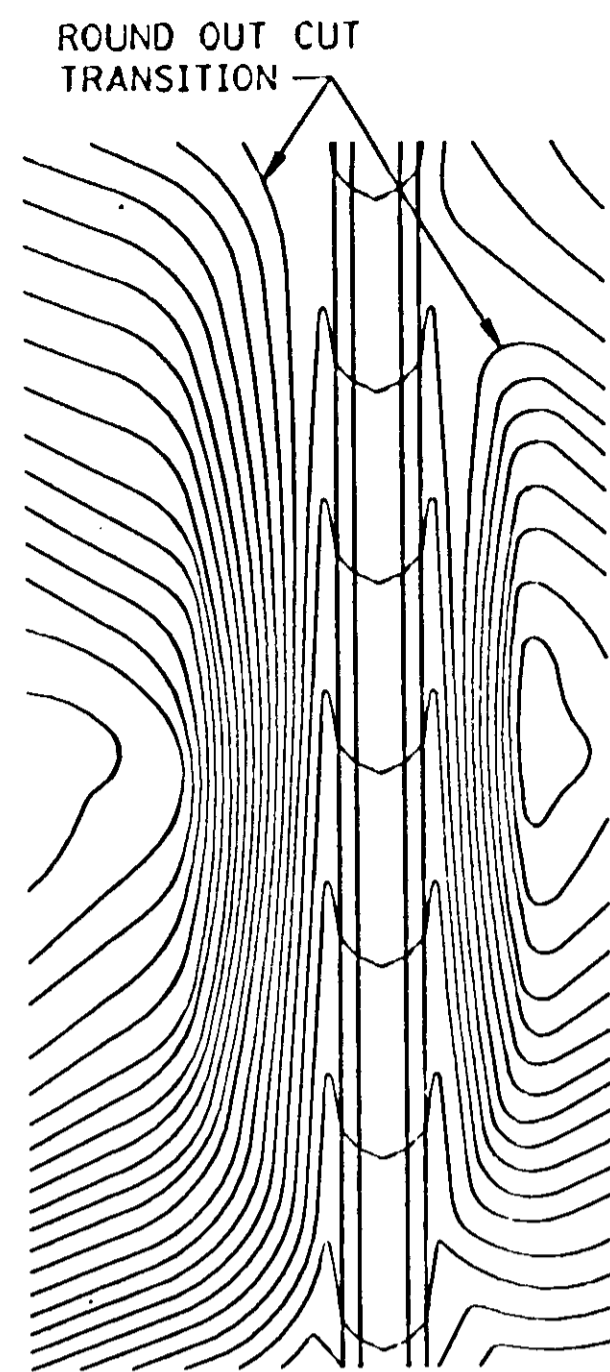
RECOMMENDED SPACING BETWEEN DITCH CHECKS	
DITCH GRADE (%)	SPACING (FT.)
2	100
4	75
6	50
8	40
10	25

**DESIGN CRITERIA:**

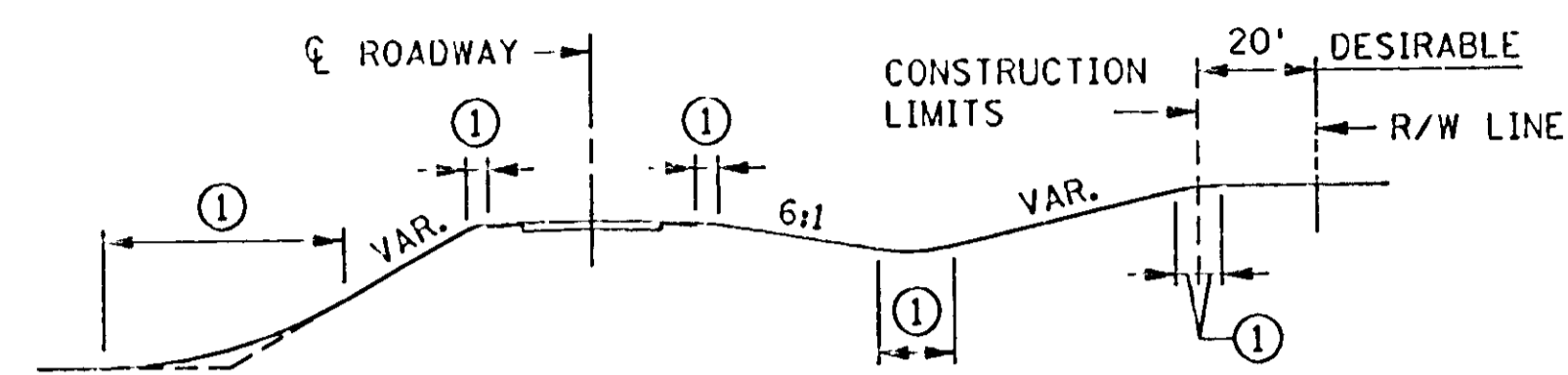
	BALE	ROCK
STORM FREQUENCY:	2 YR. - 24 HR.	10 YR. - 24 HR.
MAX. FLOW VELOCITY:	5 FT./SEC.	12 FT./SEC.
MAX. DITCH GRADE:	5%	—
MAX. DRAINAGE AREA:	2 ACRES	5 ACRES

NOTE:  
① TWO 2 IN. X 2 IN. WOOD STAKES OR REINFORCING BARS IN EACH BALE AND EMBEDDED IN THE GROUND 10 IN. MINIMUM.

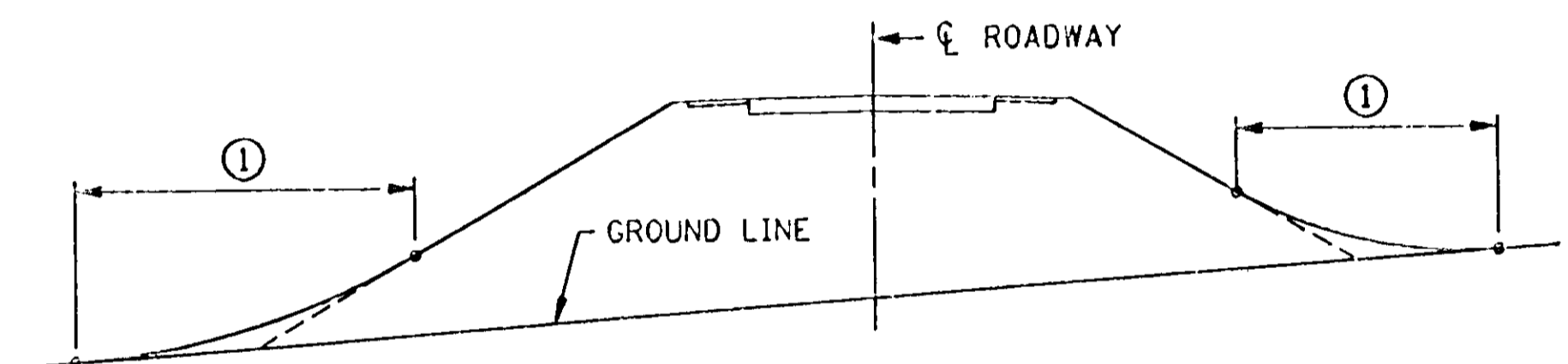
STANDARD SHEET NO. 5-297.405 (2 OF 3)	TITLE: TEMPORARY EROSION CONTROL
STANDARD APPROVED: MAY 1, 1995	
STATE PROJ. NO. S.P. 0215-48, 02-611-26 S.P. 0215-50, 114-020-11	SHEET NO. 6 OF 42 SHEETS



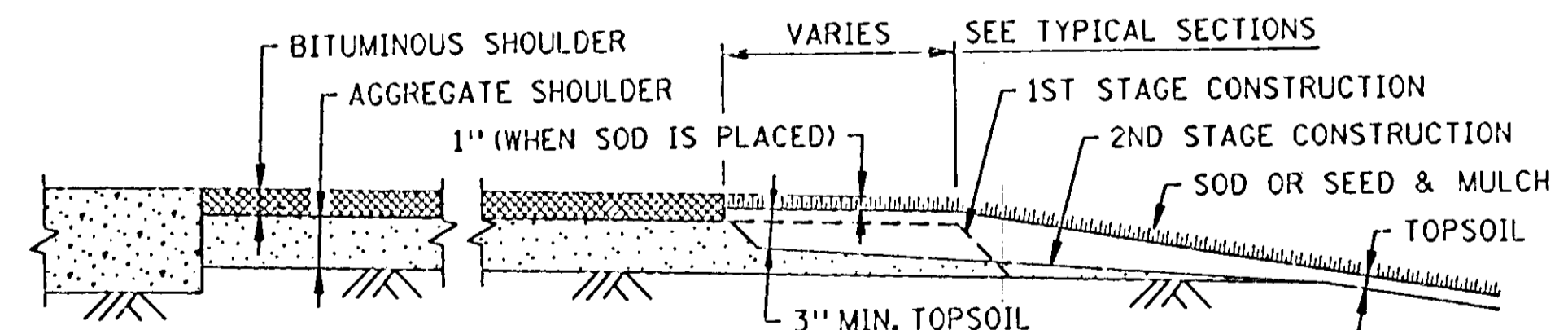
CONTOURING ROAD CUTS



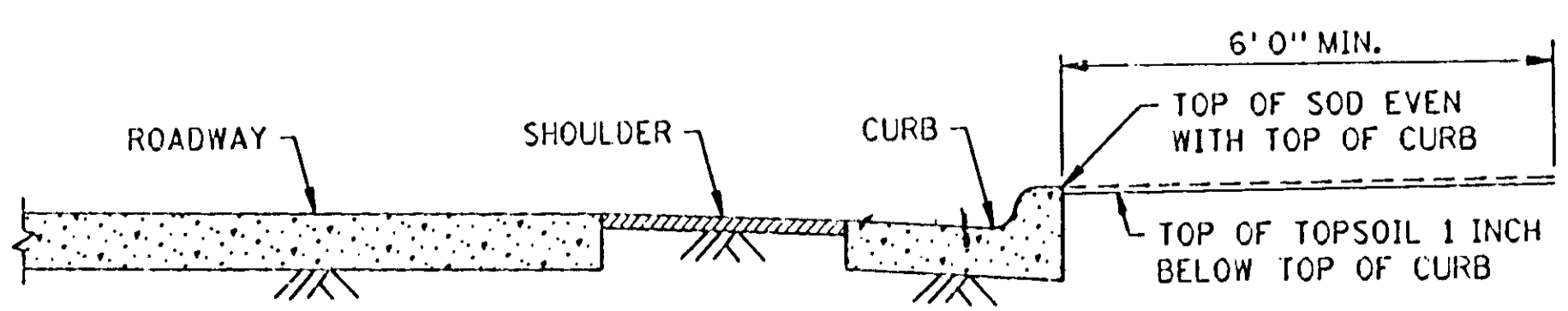
ROUNDING SHOULDERS AND BACKSLOPES



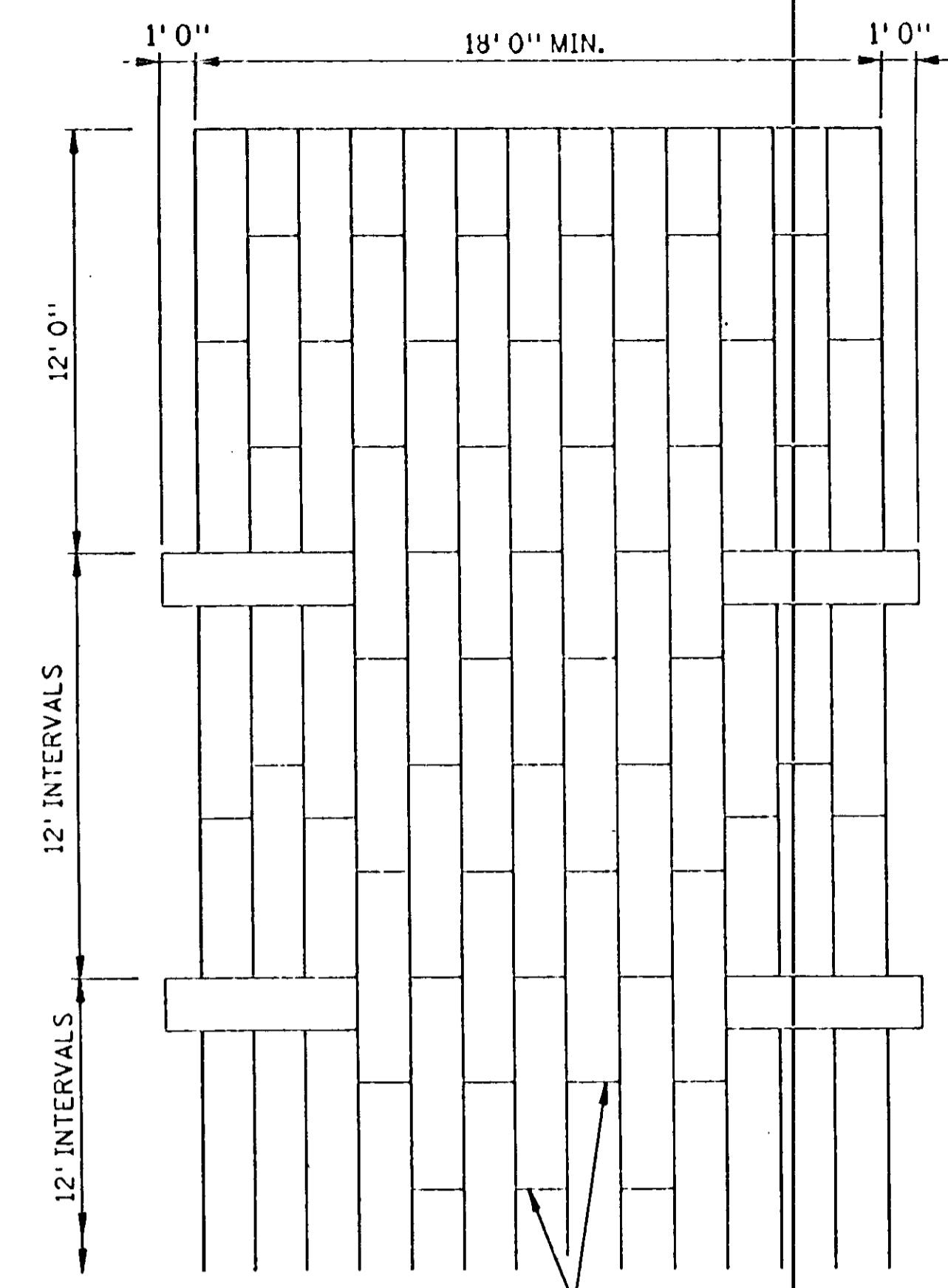
SHAPING FOR DRAINAGE ALONG THE TOE OF FILL SLOPES



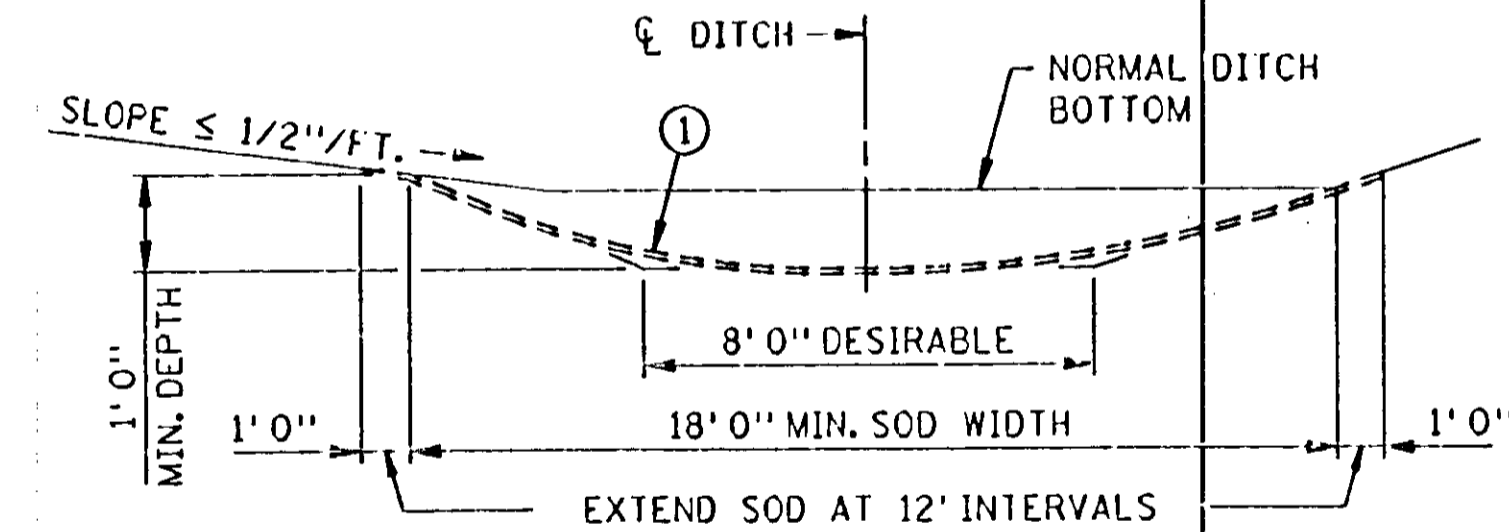
SHAPING AND TOPSOILING INSLOPES



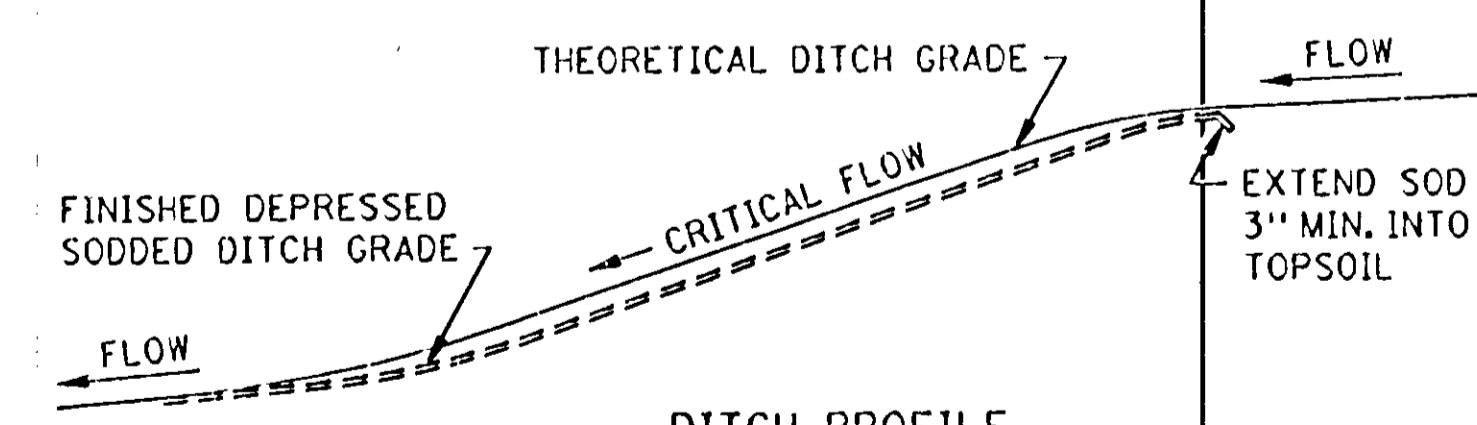
SHAPING ADJACENT TO CURBS WHEN SOD IS PLACED



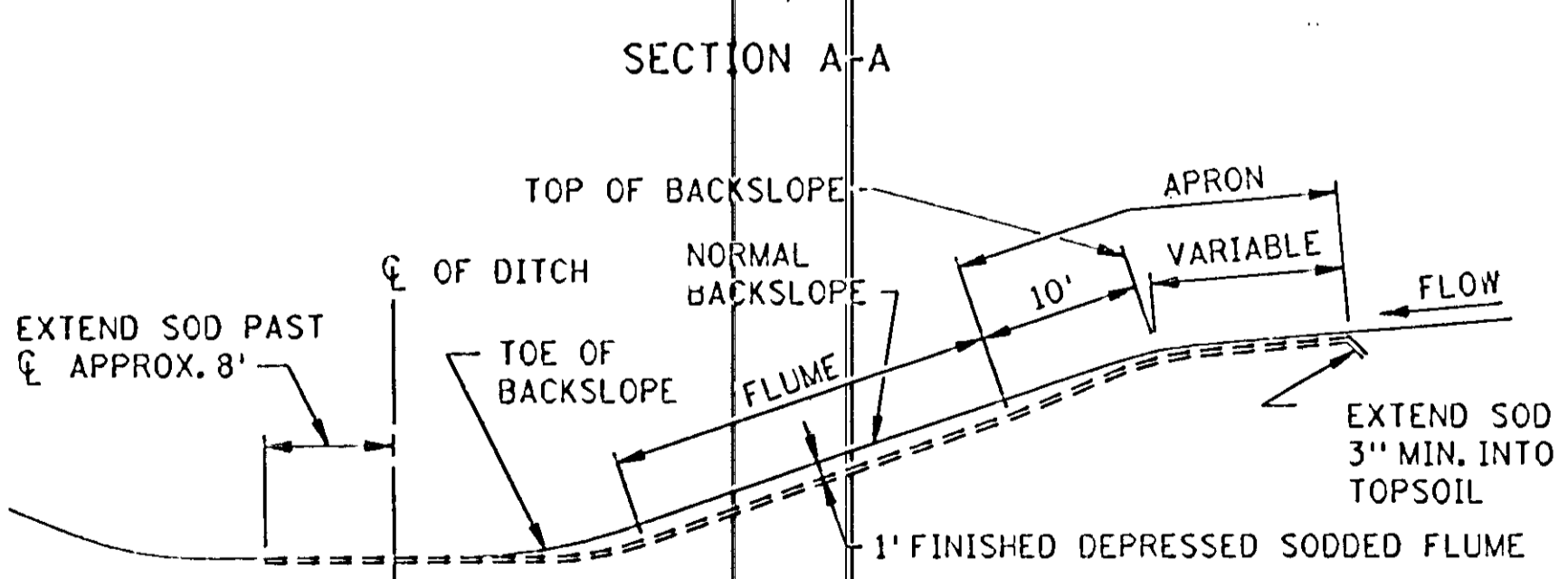
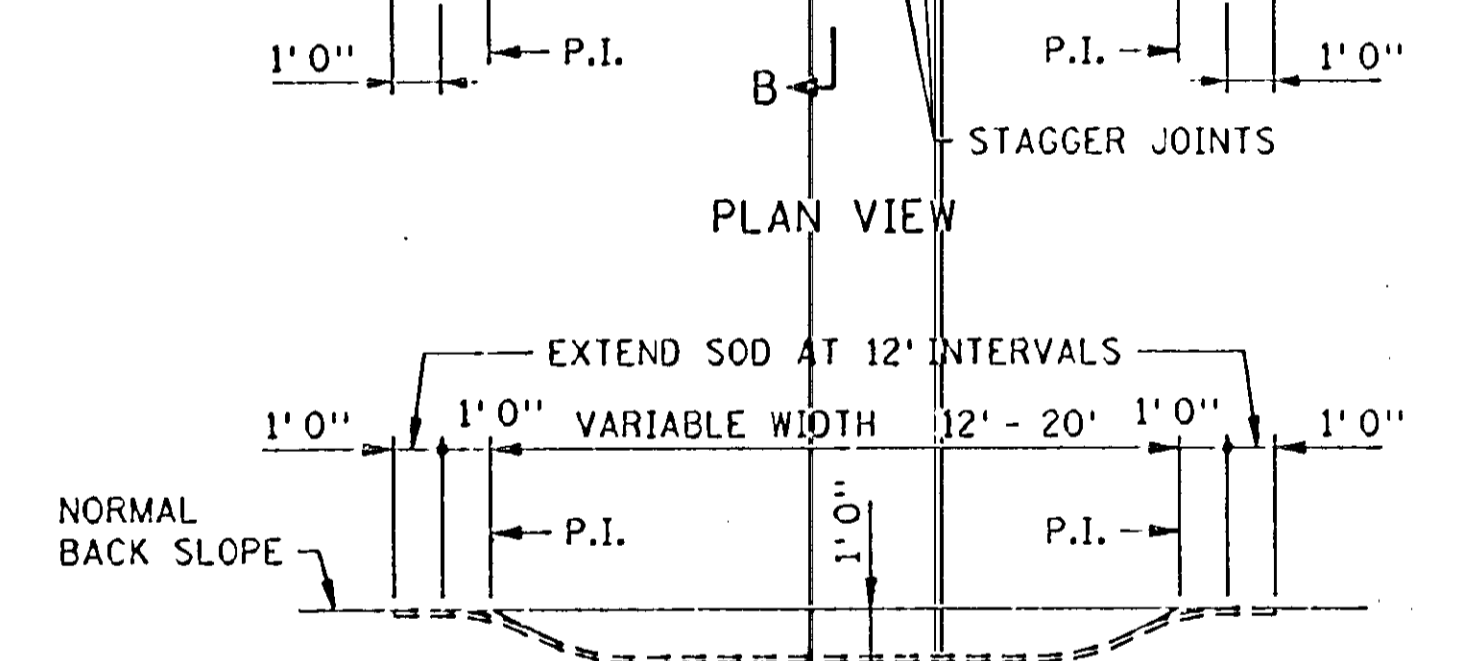
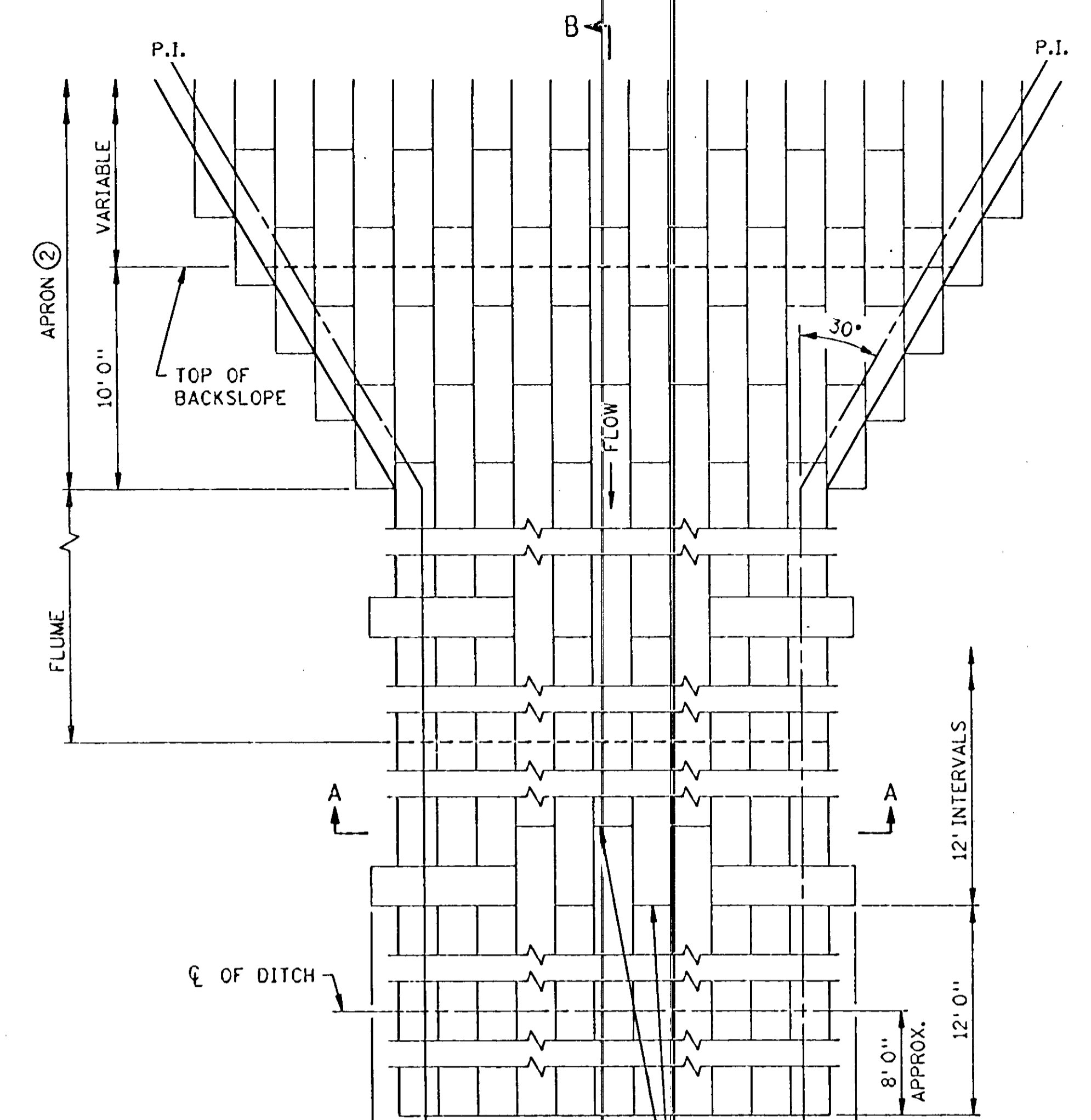
STAGGER JOINTS  
PLAN VIEW



SODDED DITCH CROSS SECTION  
WHERE FRONT OR BACK SLOPE IS FLAT (LESS THAN 1/2\"/>



DITCH PROFILE  
SODDED DITCH DETAILS



SECTION B-B  
SODDED FLUME DETAILS

- NOTES:  
 SEE SPEC. 2575.3 FOR ADDITIONAL INFORMATION.  
 ① FOR ROUNDING, SEE ROAD DESIGN MANUAL.  
 ② CONSTRUCT TAPER AS DIRECTED BY THE ENGINEER.

STANDARD SHEET NO. 5-297.404	TITLE:
STANDARD APPROVED: DECEMBER 19, 1990	PERMANENT EROSION CONTROL ALONG ROADWAYS, DITCHES AND FLUMES
STATE PROJ. NO. S.P. 0215-48, 02-611-26 S.P. 0215-50, 114-020-11	SHEET NO. 7 OF 42 SHEETS

PERMANENT EROSION CONTROL  
ALONG ROADWAYS, DITCHES AND FLUMES

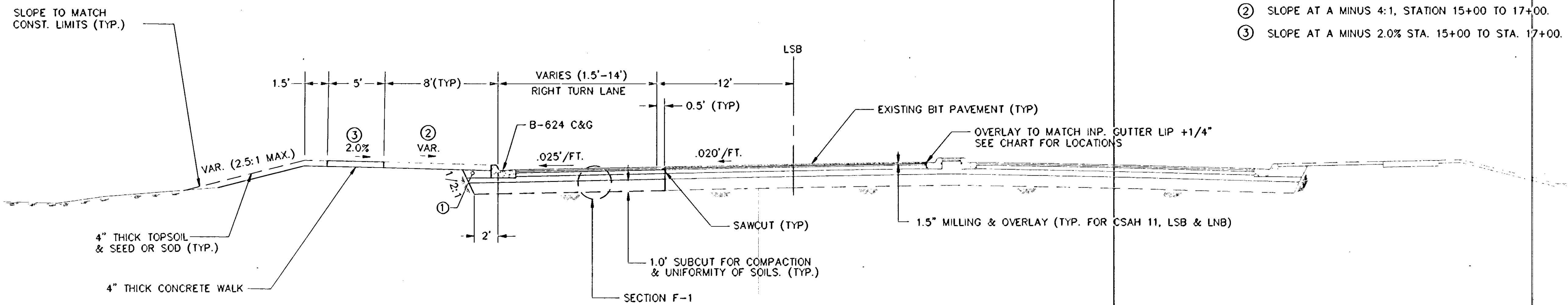
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### CSAH 11 RIGHT TURN LANE

(STA. 13+83 TO STA. 17+57)

### NOTES:

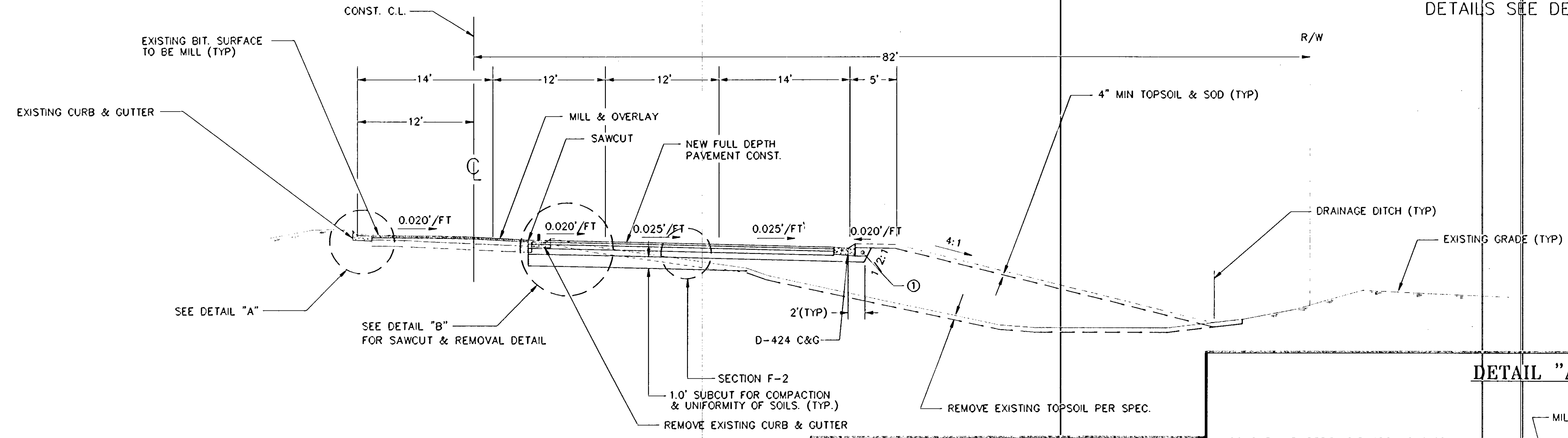
- ① BACKFILL WITH GRANULAR MATERIAL & COMPACT PER SPECIFICATIONS.
- ② SLOPE AT A MINUS 4:1, STATION 15+00 TO 17+00.
- ③ SLOPE AT A MINUS 2.0% STA. 15+00 TO STA. 17+00.



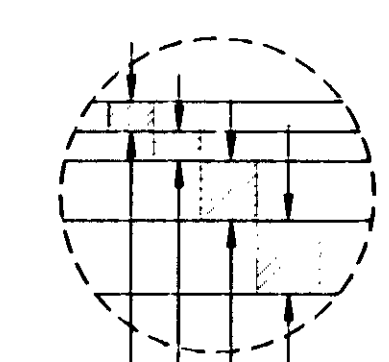
### T.H. 10 EXIT RAMP

(STA. 10+20.01 TO STA. 16+70.51)

**NOTE:** FOR RAMP MILLING AND OVERLAY DETAILS SEE DETAIL "A"

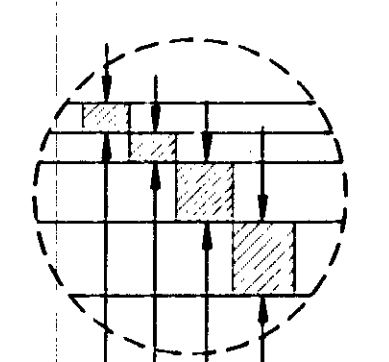


### SECTION-F1



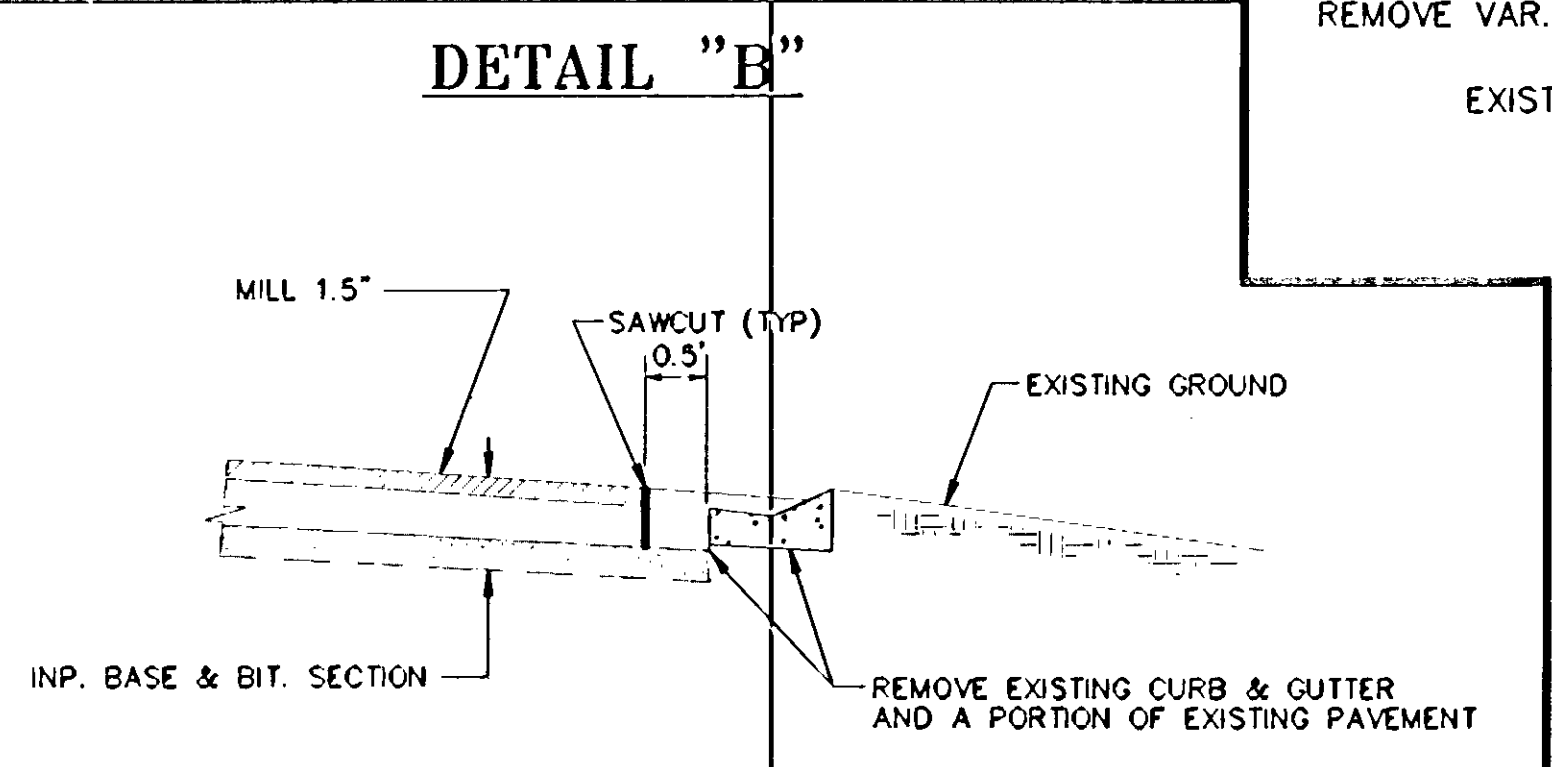
- 1 1/2" TYPE 41 WEAR (41WEA50055)
- 2" TYPE 41 BINDER (41BIB50055)
- 3" TYPE 31 BASE (31BBB50000)
- 6" AGGREGATE BASE CLASS 5

### SECTION-F2

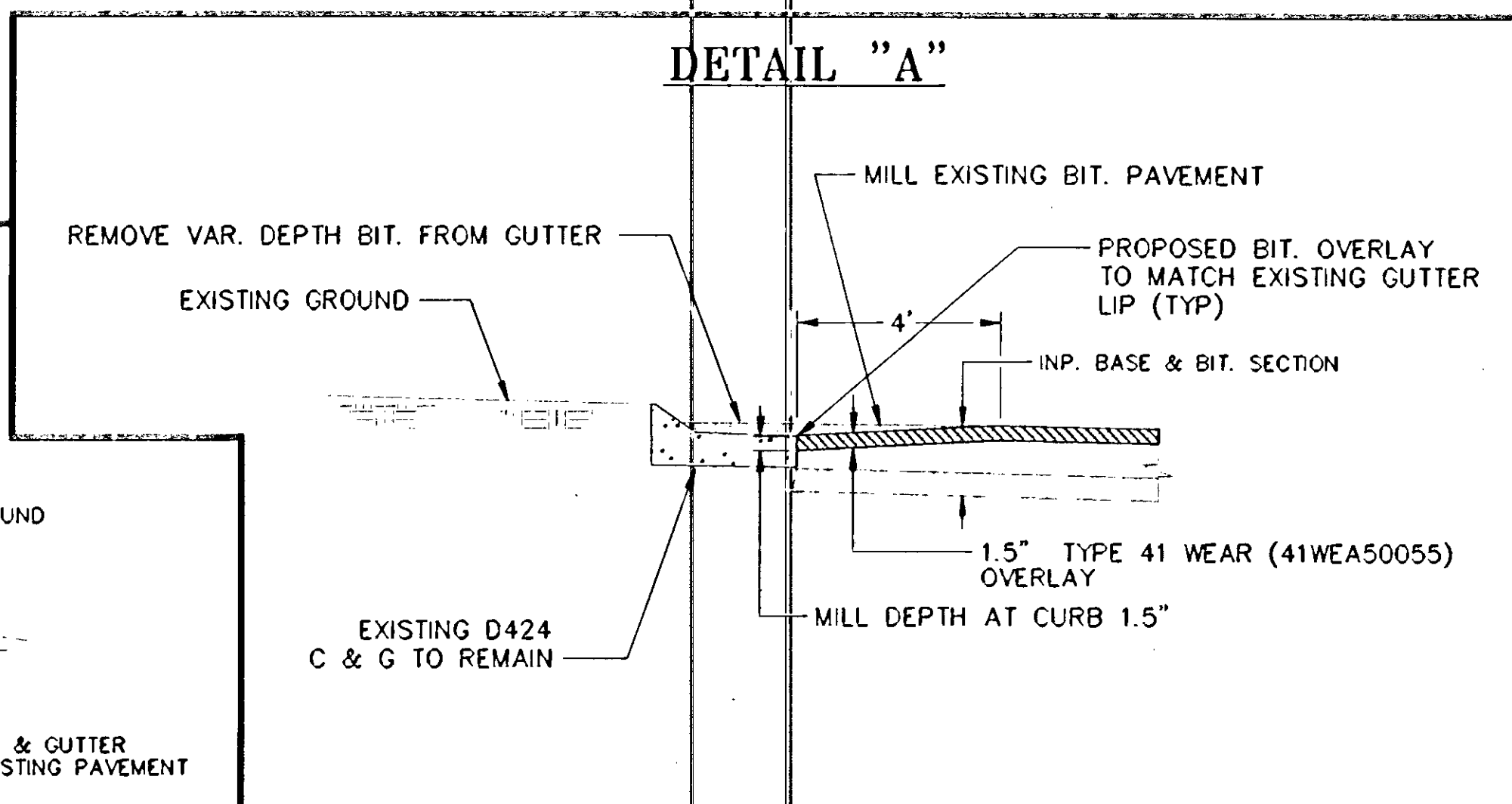


- 1 1/2" TYPE 41 WEAR (41WEA50055)
- 2" TYPE 41 BINDER (41BIB50055)
- 3 1/2" TYPE 31 BASE (31BBB50000)
- 6" AGGREGATE BASE CLASS 5

### DETAIL "B"



### DETAIL "A"



### TYPICAL SECTIONS

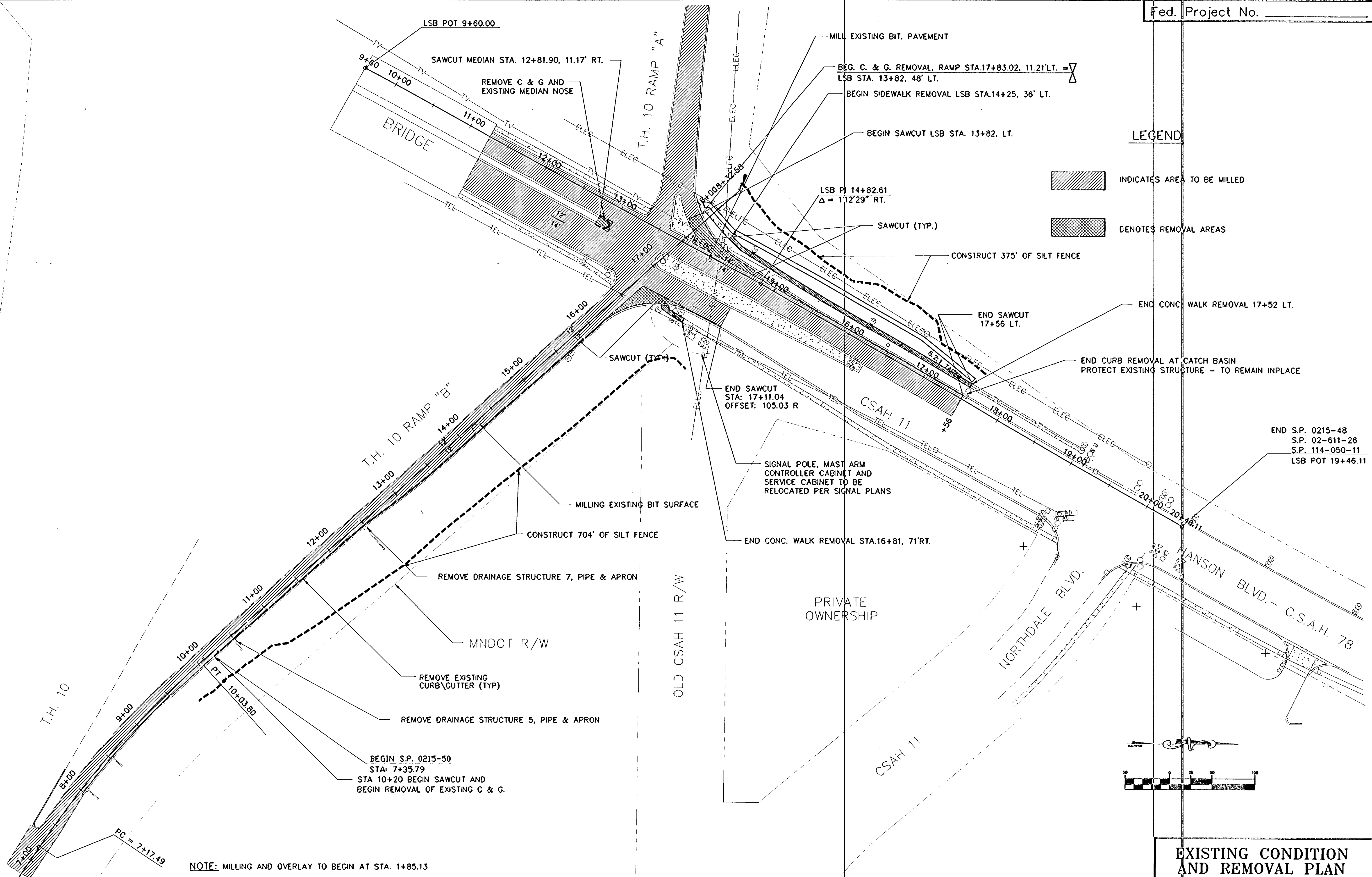
REVISIONS	DATE	BY

CERTIFIED BY \_\_\_\_\_ P.E. REG NO. \_\_\_\_\_ 19 \_\_\_\_\_

S.P. 0215-48, S.P. 02-611-26, S.P. 0215-50, S.P. 114-020-11 S.A.P. \_\_\_\_\_ C.P. \_\_\_\_\_

Sheet No. 8 of 42 Sheets





P9674C3.dwg 3-16-98 10:41:59 am EST

DATE	BY	DATE	BY



BEGIN S.P. 02-611-26 MILL & OVERLAY  
NORTH RANGE - NORTHDAL BLVD. N. GUTTER/  
ROBINSON DR. N. GUTTER

BEGIN PROJECT S.P. 02-611-26  
LSB P.O.T. 2+71.73

BEGIN RAMP "C" MILL & OVERLAY  
STA. 0+00.00= A PT. 7.68' RT.  
& ⊥ TO TH.10 EB STA. 10+00.00

BEGIN S.P. 0215-50  
TH.10 EB STA. 10+00.00

BEGIN RAMP "A" MILL & OVERLAY  
STA. 0+00.00

BEGIN RAMP "D" MILL & OVERLAY  
C/L STA. 0+20.51

END RAMP "C" MILL & OVERLAY  
STA. 15+38

END RAMP "B" MILL & OVERLAY  
STA. 16+87.27

END RAMP "A" MILL & OVERLAY  
C/L STA. 10+98  
FREE RT. S.B. C.S.A.H. 11, STA. 10+81.62, 34.83' LT.

END RAMP "D" MILL & OVERLAY  
STA. 16+59.49= A PT. 0.00' RT. &  
⊥ TO TH.10 E.B. STA. 41+41.69

END S.P. 0215-50  
STA. 41+41.69

END MILL & OVERLAY  
STA. 14+84 N.B. (LSB ALIGN.)  
STA. 17+56 S.B. (LSB ALIGN.)

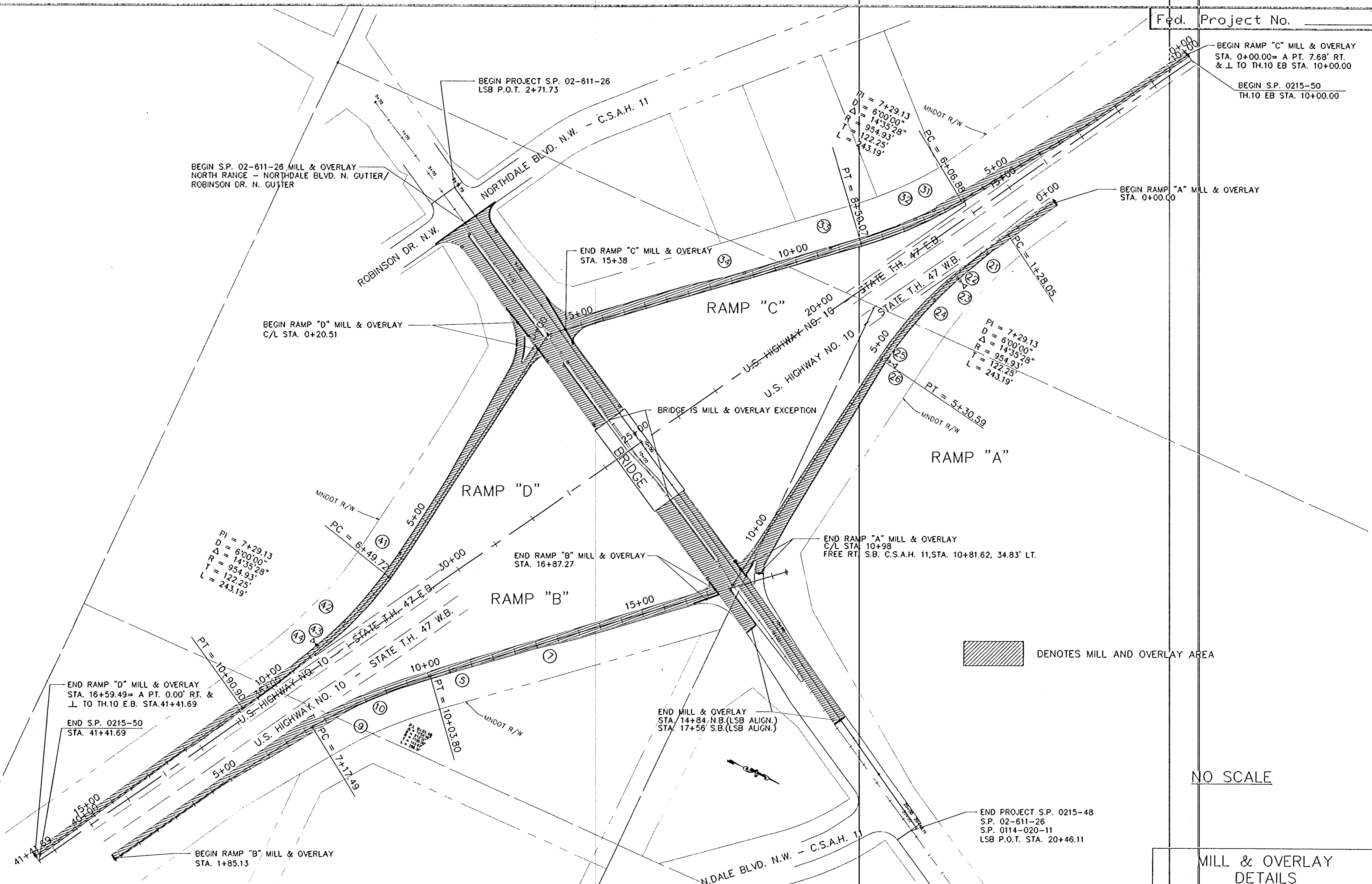
BEGIN RAMP "B" MILL & OVERLAY  
STA. 1+85.13

 DENOTES MILL AND OVERLAY AREA

NO SCALE

END PROJECT S.P. 0215-48  
S.P. 02-611-26  
S.P. 0114-020-11  
LSB P.O.T. STA. 20+46.11

MILL & OVERLAY  
DETAILS



FILE NAME: S:\SDSKPROJ\0261126\967415C15.DWG MN. (10-07-97)

REVISIONS	DATE	BY

**LEGEND OF SYMBOLS**

CONTROLLER AND SERVICE EQPT 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 (R.S.C.)	==
RIGID STEEL CONDUIT (R.S.C.) 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	→

**ABBREVIATIONS**

**EQUIPMENT AND INDICATIONS**

RED	-	RED
YEL	-	YELLOW
GRN	-	GREEN
WLK	-	WALK
NEU	-	NEUTRAL
DWK	-	DON'T WALK
LUM	-	LUMINAIRE
DNL	-	DOWNLIGHT
H.H.	-	HANDHOLE
EQG	-	EQUIPMENT GROUND
R.S.C.	-	RIGID STEEL CONDUIT
GLTA	-	GREEN LEFT TURN ARROW
YRTA	-	YELLOW RIGHT TURN ARROW
D2-1 (eg)	-	DETECTOR - PHASE "2"
GR.R	-	GROUND ROD
SER	-	SERVICE
P2-1 (eg)	-	PEDESTRIAN INDICATIONS-PHASE "2"
2-1 (eg)	-	SIGNAL HEADS-PHASE "2"
SPR	-	SPARE CONDUCTORS
N.M.C.	-	NON METALLIC CONDUIT
E.V.P.	-	EMERGENCY VEHICLE PRE-EMPTION
J.B.	-	JUNCTION BOX
W.P.	-	WOOD POLE
P.E.C.	-	PHOTOELECTRIC CELL
GTHA	-	GREEN THROUGH ARROW
PB2-2 (eg)	-	PEDESTRIAN PUSH BUTTON-PHASE "2"
TDW	-	TELEPHONE DROP WIRE
S.O.P.	-	SOURCE OF POWER
H.P.S.	-	HIGH PRESSURE SODIUM
F & I	-	FURNISH AND INSTALL
R & S	-	REMOVE AND SALVAGE
Br. Gr.	-	BARE GROUND
○	-	EQG CONNECTION
—●—	-	SPLICE

**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

\*The following Standard Plates, approved by the FEDERAL HIGHWAY ADMINISTRATION, shall apply on this project.

PLATE NO.	DESCRIPTION
* 8110 D	TRAFFIC SIGNAL BRACKETING - POLE MOUNTED
* 8111 C	TRAFFIC SIGNAL BRACKETING - PEDESTAL MOUNTED
* 8112 C	PEDESTAL FOUNDATION
* 8113 C	MAGNETIC VEHICLE DETECTOR INSTALLATION
* 8114 A	PVC HANDHOLE/PULLBOX
* 8115 D	PEDESTRIAN PUSH BUTTON INSTALLATION
* 8118 C	SERVICE EQUIPMENT AND POLE - TRAFFIC SIGNALS
* 8119 C	GROUND MOUNTED CABINET FOUNDATION
* 8120 K	PA85 POLE FOUNDATION
* 8121 D	TRANSFORMER BASE AND POLE BASE PLATE
* 8122 C	PEDESTAL AND PEDESTAL BASE
* 8123 D	POLE AND MAST ARM
* 8124 E	MAST ARM SIGNAL HEAD MOUNTS
* 8126 F	PA90 AND PA100 POLE FOUNDATION
* 8127 B	LIGHT BASE-DESIGN E

FEDERAL PROJ. NO. 0296(128)  
S.P. 0215-48, 0215-50  
S.P. 02-611-26, 114-020-11

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: 3/6/98 Reg. No. 22457

**SIGNING DETAILS**

TYPE "D" SIGNS - F & I								
SIGNAL SYSTEM	SIGN PANEL	SIZE	NO. REQ.	NO. POSTS PER SIGN	POST SPACING	SQ.FT. PER SIGN	POLE NO.	α
B	D-1	72"x66"	1	2	42"	33.00	1	10'
B	D-2	72"x66"	1	2	42"	33.00	3	2'
B	D-3	72"x66"	1	2	42"	33.00	3	10'
B	D-4	90"x18"	1	2	54"	11.25	4	8'
C	D-5	72"x66"	1	2	42"	33.00	1	10'
C	D-6	72"x66"	1	2	42"	33.00	3	2'
C	D-7	72"x66"	1	2	42"	33.00	3	10'
C	D-8	90"x18"	1	2	54"	11.25	5	18'

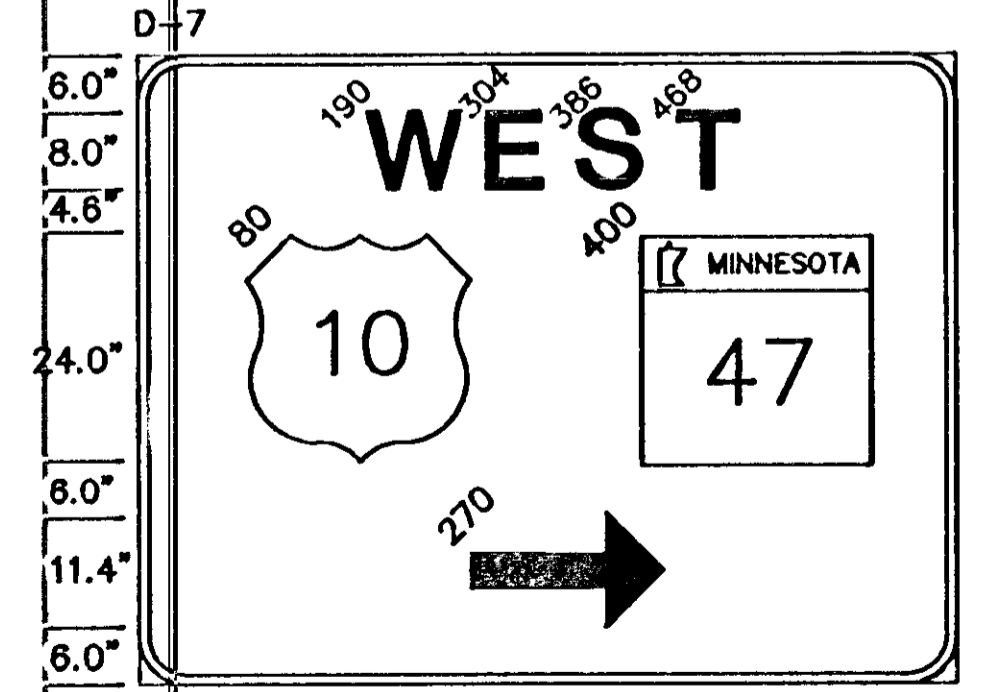
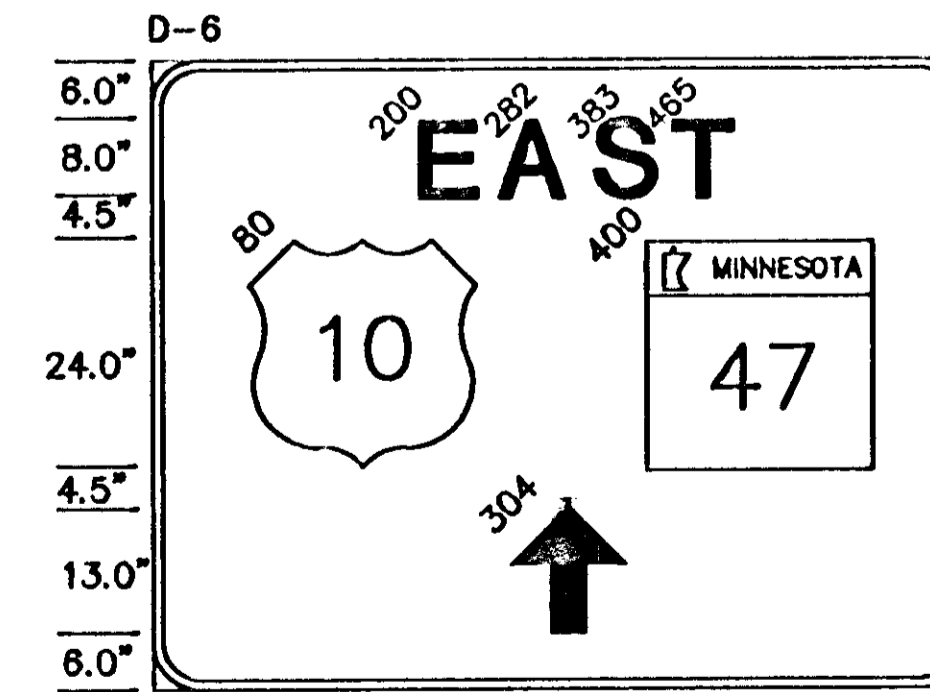
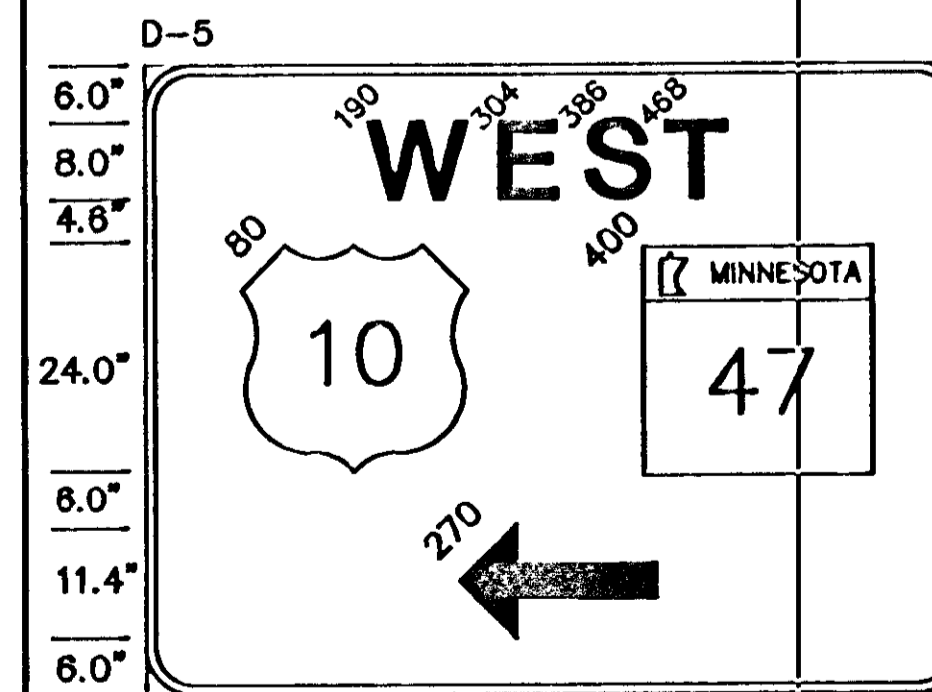
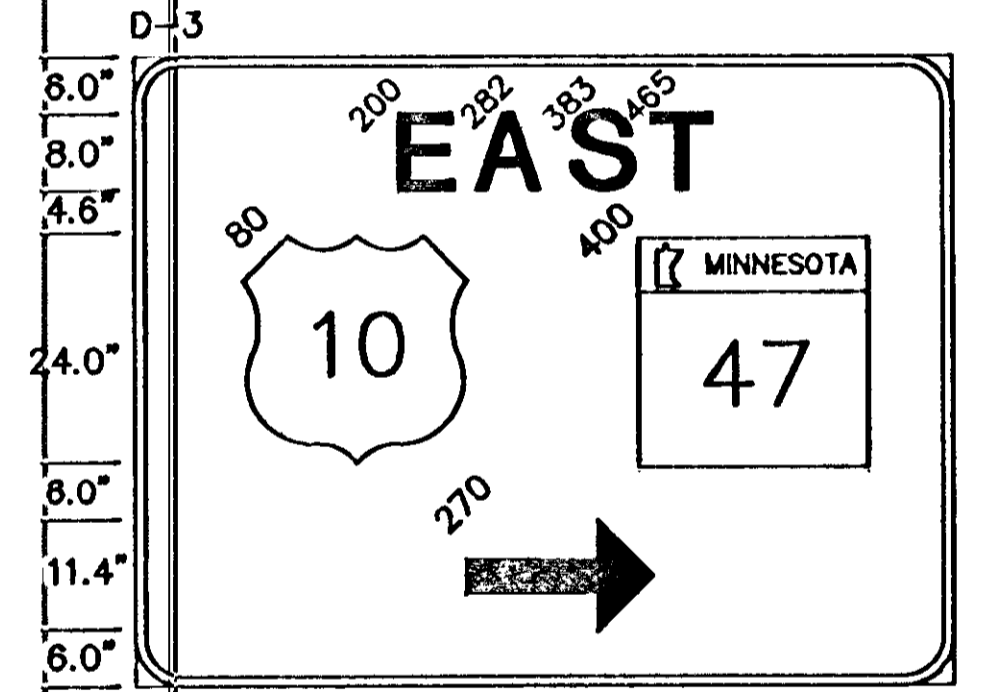
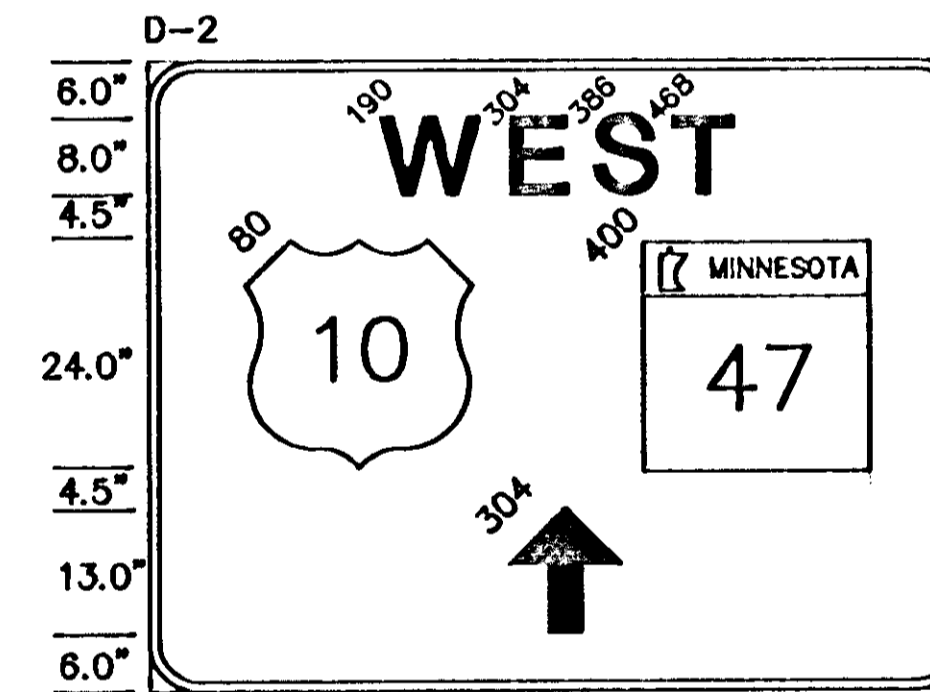
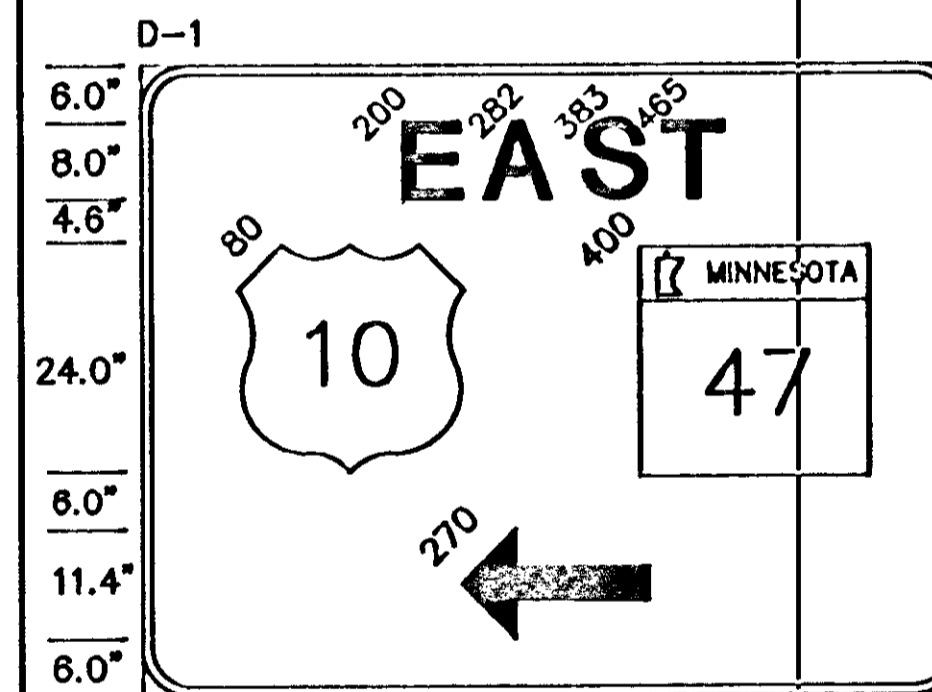
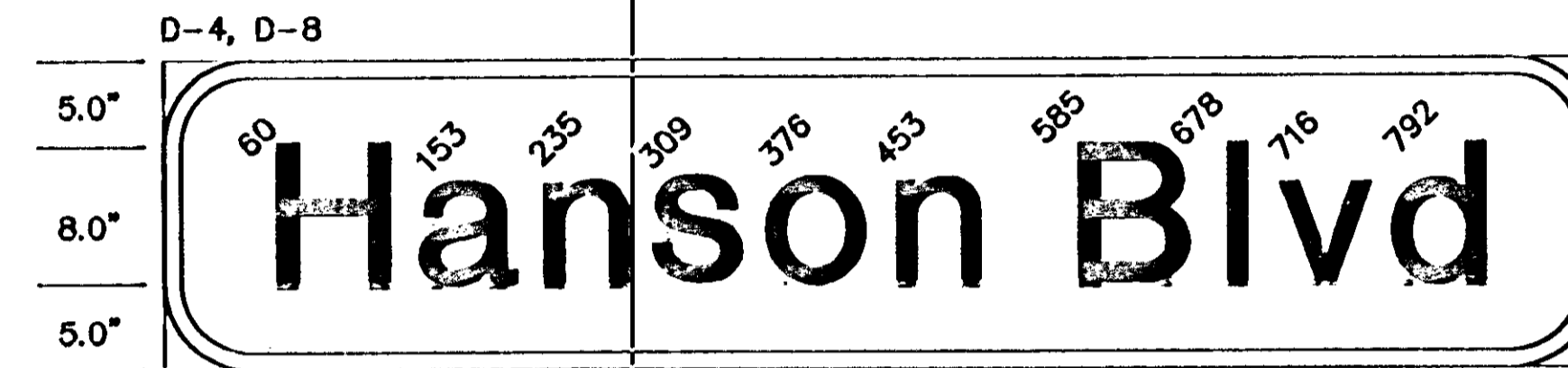
  

REGULATORY SIGNS - F & I								
SIGNAL SYSTEM	SIGN PANEL	SIZE	NO. REQ.	NO. POSTS PER SIGN	POST SPACING	SQ.FT. PER SIGN	POLE NO.	α
B,C	R8-1L	36"x12"	4	①	-	3.00	-	-
B,C	R8-1R	36"x12"	4	①	-	3.00	-	-
B,C	R9-3a	18"x18"	12	①	-	2.25	-	-
C	R10-11b	24"x24"	1	2	12"	4.00	5	6'
B	R10-12	24"x30"	1	①	-	5.00	5	-
C	R10-12	24"x30"	1	①	-	5.00	5	-

**NOTES:**

- COLOR-WHITE LEGEND AND BORDER ON GREEN BACKGROUND, FULLY REFLECTORIZED.
- CORNERS EXTENDING BEYOND THE BORDER SHALL NOT BE TRIMMED.
- FOR STRUCTURAL DETAILS, TYPE "D" SIGNS, SEE STANDARD SIGNS MANUAL, PAGE 105A AND B.
- FOR TYPE "D" STRINGER AND PANEL-JOINT DETAIL, SEE STANDARD SIGNS MANUAL.
- SIGN PANELS TO BE FURNISHED AND INSTALLED (OR SALVAGED) INCIDENTAL TO ITEM NO.2565.511 FOR EACH SIGNAL SYSTEM.
- SEE STANDARD SIGNS MANUAL FOR ARROW AND OVERLAY DETAILS.
- ① = MOUNT ON TRAFFIC SIGNAL MAST ARM POLE OR PEDESTAL POLE AS NOTED IN PLANS & SPECIAL PROVISIONS.

OVERLAYS				
CODE NO.	QUANTITY	SIZE (IN.)	LEGEND	Sq. Ft. per OVERLAY
M1-4A	6	24x24	US HIGHWAY 10	4.00
M1-5B	6	24x24	MINN.HIGHWAY 47	4.00



NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED
1	JMG	7/97	PER MN/DOT COMMENTS			



MINNESOTA DEPT OF TRANSPORTATION  
CITY OF COON RAPIDS

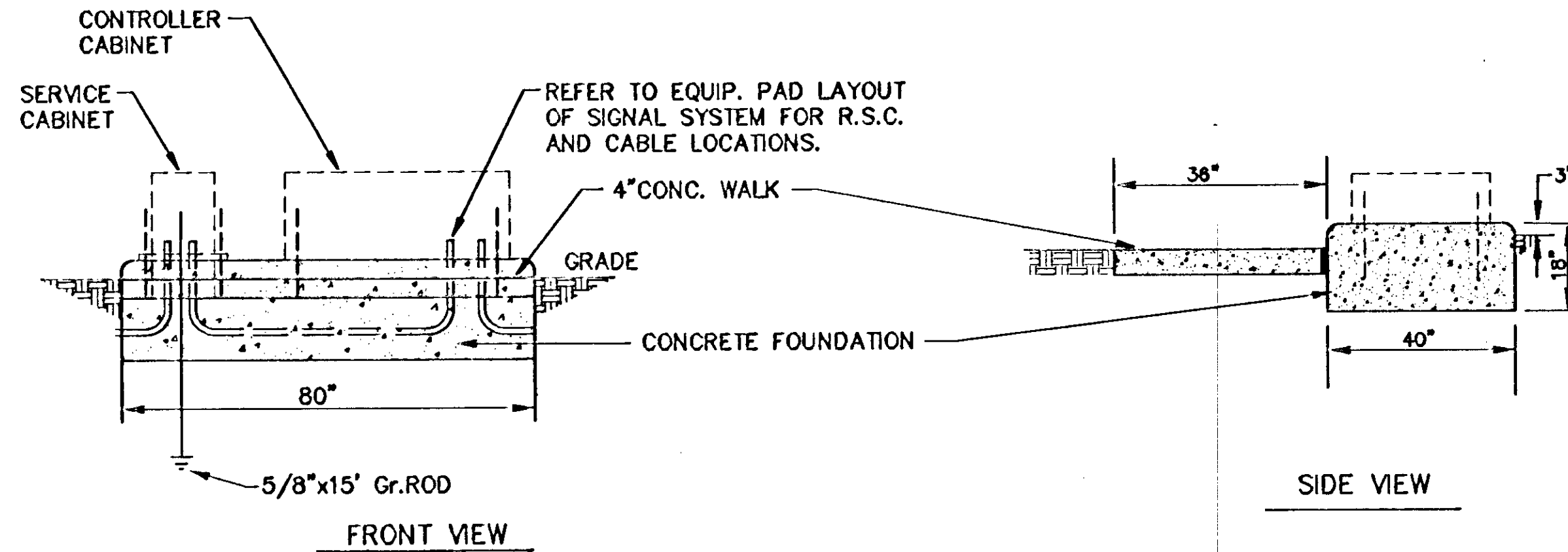
TRAFFIC SIGNAL SYSTEMS A-D  
DETAILS & STANDARD PLATES

FILE NO.	12
MNDOT9611	
DATE	3/6/98
	42

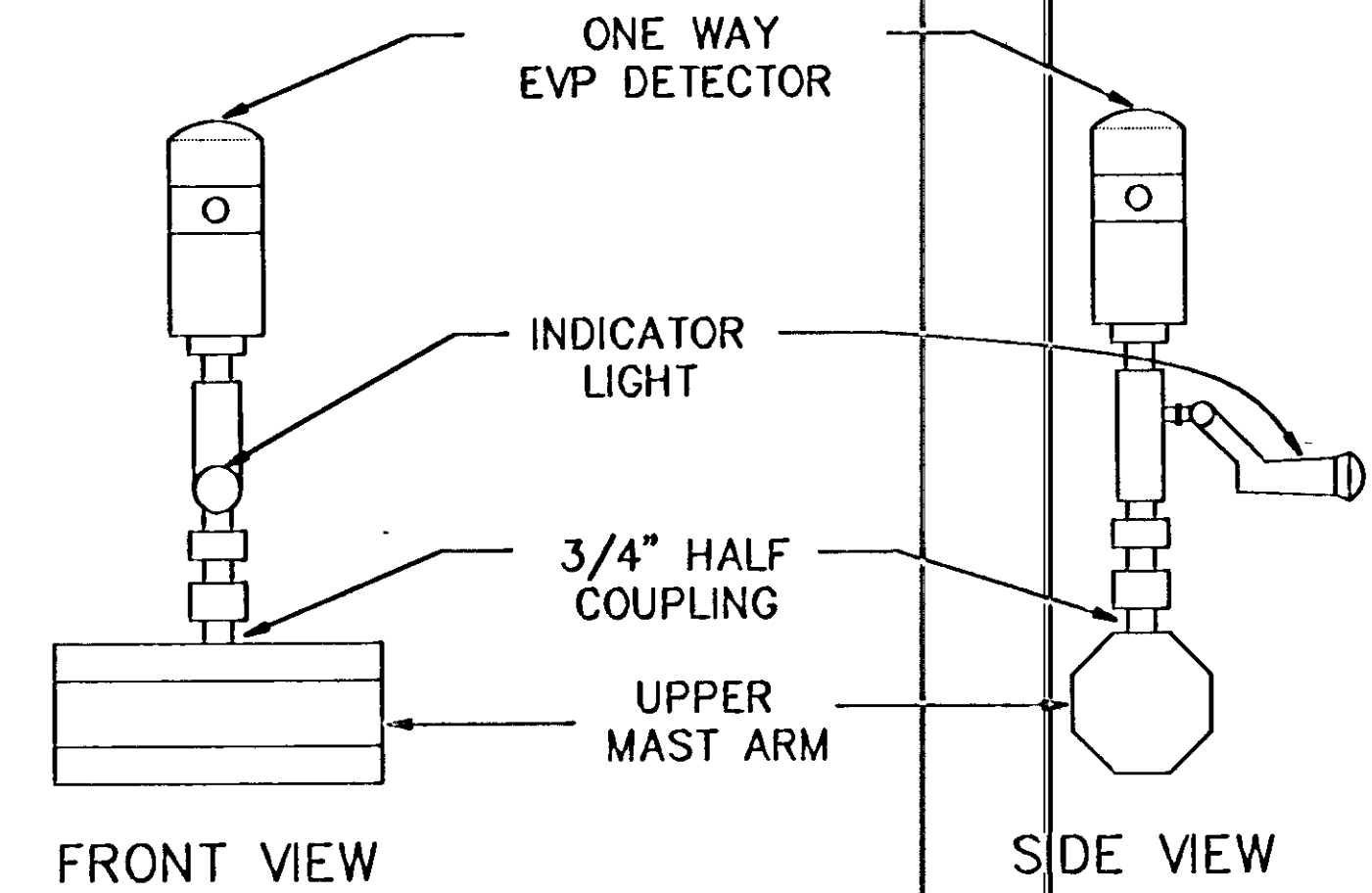
**EQUIPMENT PAD FOUNDATION**

**NOTES:**

- 1) ANCHOR RODS, NUTS AND WASHERS PER Mn/DOT 3385 OR APPROVED EQUAL SET AS RECOMMENDED BY CABINET MANUFACTURER. NUMBER, SIZE AND LENGTH OF ANCHOR RODS SHALL BE AS REQUIRED BY THE CABINET MANUFACTURER.
- 2) UPPER PART OF FOUNDATION SHALL BE BEVELED OR CHAMFERED IN A NEAT MANNER AS DIRECTED BY THE ENGINEER IN THE FIELD.
- 3) TOP OF CONDUITS SHALL BE THREADED AND CAPPED AFTER INSTALLATION (UNTIL CABLES ARE INSTALLED). CONDUITS SHALL PROJECT A MINIMUM OF 2" ABOVE CONCRETE AND SHALL BE LOCATED INSIDE THE CABINET WHERE DIRECTED BY THE ENGINEER, BUT SHALL NOT INTERFERE WITH CABINET FUNCTIONS OR SUPPORTING MEMBERS, ETC.
- 4) CONCRETE MIX 3A32 OR EQUAL SHALL BE USED FOR FOUNDATION AND CONCRETE WALK.
- 5) CONDUITS WHICH HAVE BOTH ENDS TERMINATING WITHIN THE PAD SHALL NOT BE INSTALLED BELOW THE CONCRETE.
- 6) EXACT LOCATIONS OF CONDUIT WITHIN THE PAD SHALL BE AS DETERMINED BY THE ENGINEER IN THE FIELD.
- 7) REFER TO EQUIPMENT PAD LAYOUT OF SIGNAL SYSTEM FOR FOUNDATION SIZE, CONDUIT PLACEMENT AND EQUIPMENT TO BE INSTALLED.
- 8) ANCHOR RODS, NUTS AND WASHERS FOR THE STATE FURNISHED CONTROLLERS AND CABINETS WILL BE FURNISHED BY THE STATE FOR THE CONTRACTOR TO INSTALL.



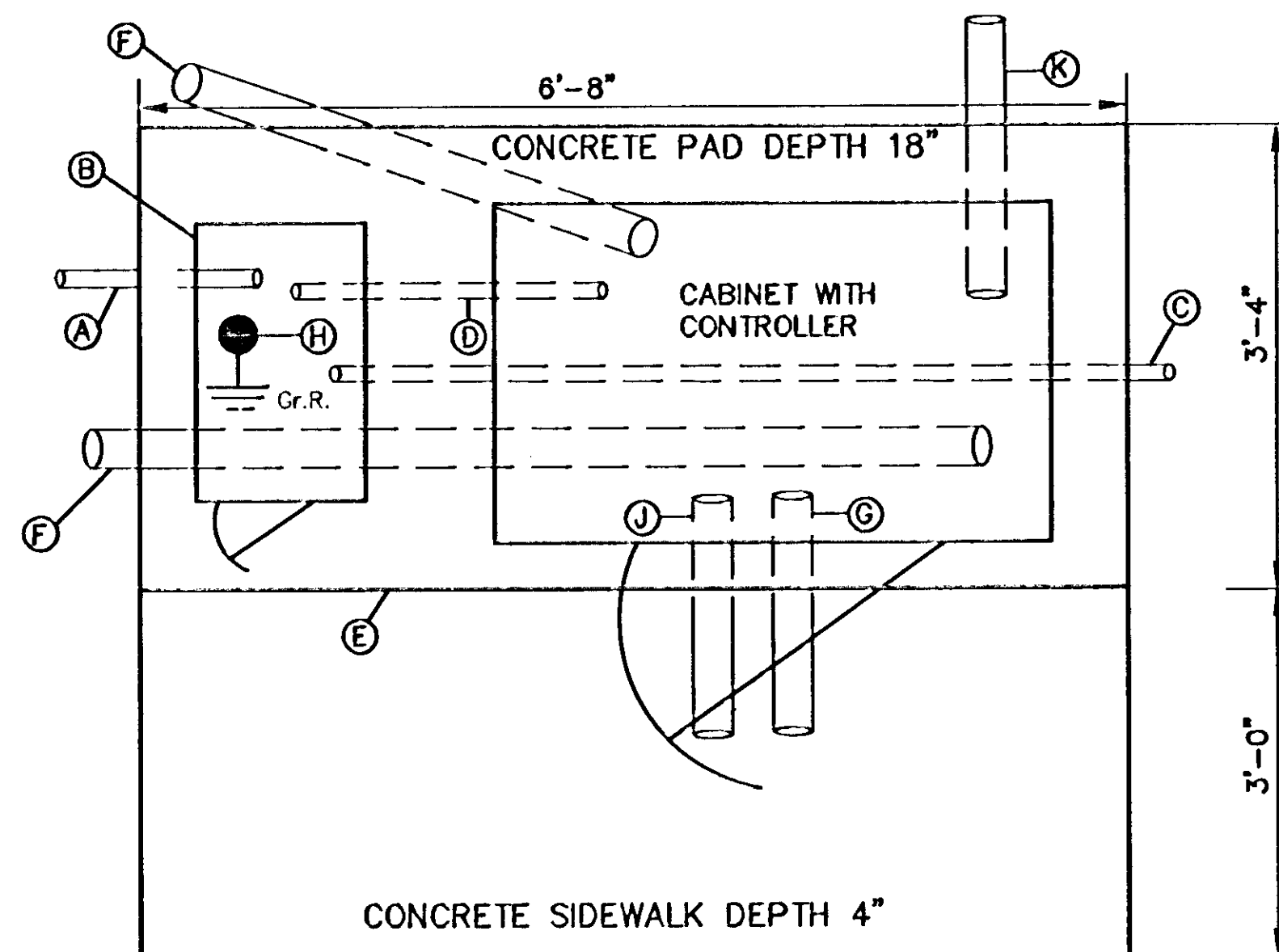
**EVP DETECTOR AND LIGHT MOUNTING DETAIL ON MAST ARM**



**TYPICAL PAD WITH CABINET, CONTROLLER, SERVICE EQUIPMENT**

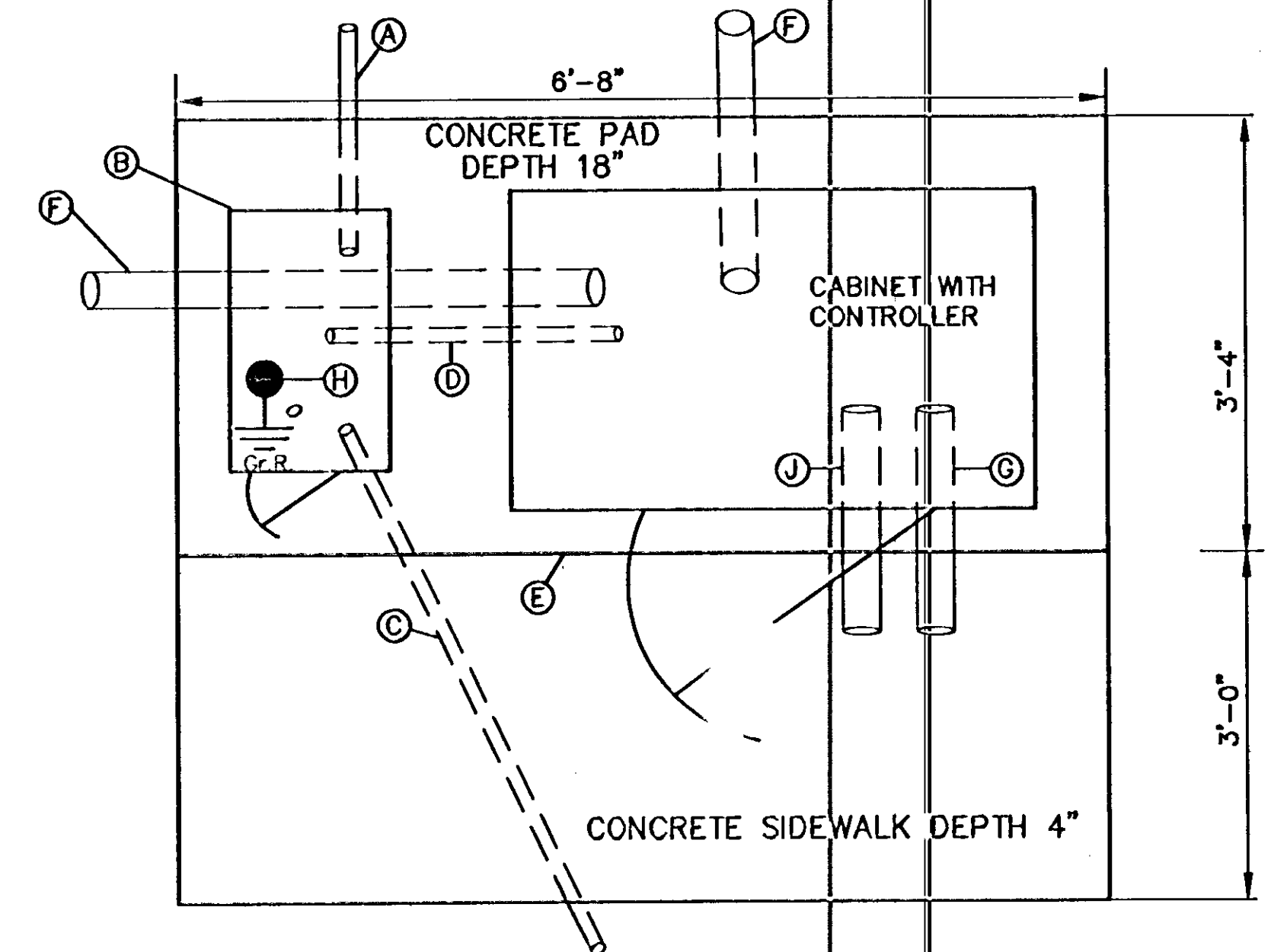
SEE INTERSECTION LAYOUT FOR CONDUIT AND CABLE INFORMATION

**TRAFFIC SIGNAL SYSTEM "B"**  
HANSON BOULEVARD (CSAH 78) AT T.H.10 SOUTH RAMPS



- (A) 2" R.S.C. TO H.H. WITH 3/c#12 CABLES (LUM.)
- (B) SERVICE CABINET
- (C) 2" R.S.C. WITH 3-1/c#X TO SIGNAL SOURCE OF POWER
- (D) 1 1/4" R.S.C. WITH 2-1/c#6 AND 1-1/c#6 Br.Gr.
- (E) PREFORMED JOINT FILLER
- (F) 4" R.S.C. TO H.H.
- (G) 3" R.S.C. STUB OUT (THREADED BOTH ENDS AND CAPPED)
- (H) GROUND ROD
- (J) 2" R.S.C. STUB OUT (THREADED BOTH ENDS AND CAPPED)
- (K) 3" R.S.C. TO H.H.

**TRAFFIC SIGNAL SYSTEM "C"**  
HANSON BOULEVARD (CSAH 78) AT T.H.10 NORTH RAMPS



FEDERAL PROJ. NO. 0296(128)  
S.P. 0215-48, 0215-50  
S.P. 02-611-26, 114-020-11

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.  
*John M. Spay*  
Date: 3/6/98 Reg. No. 22457

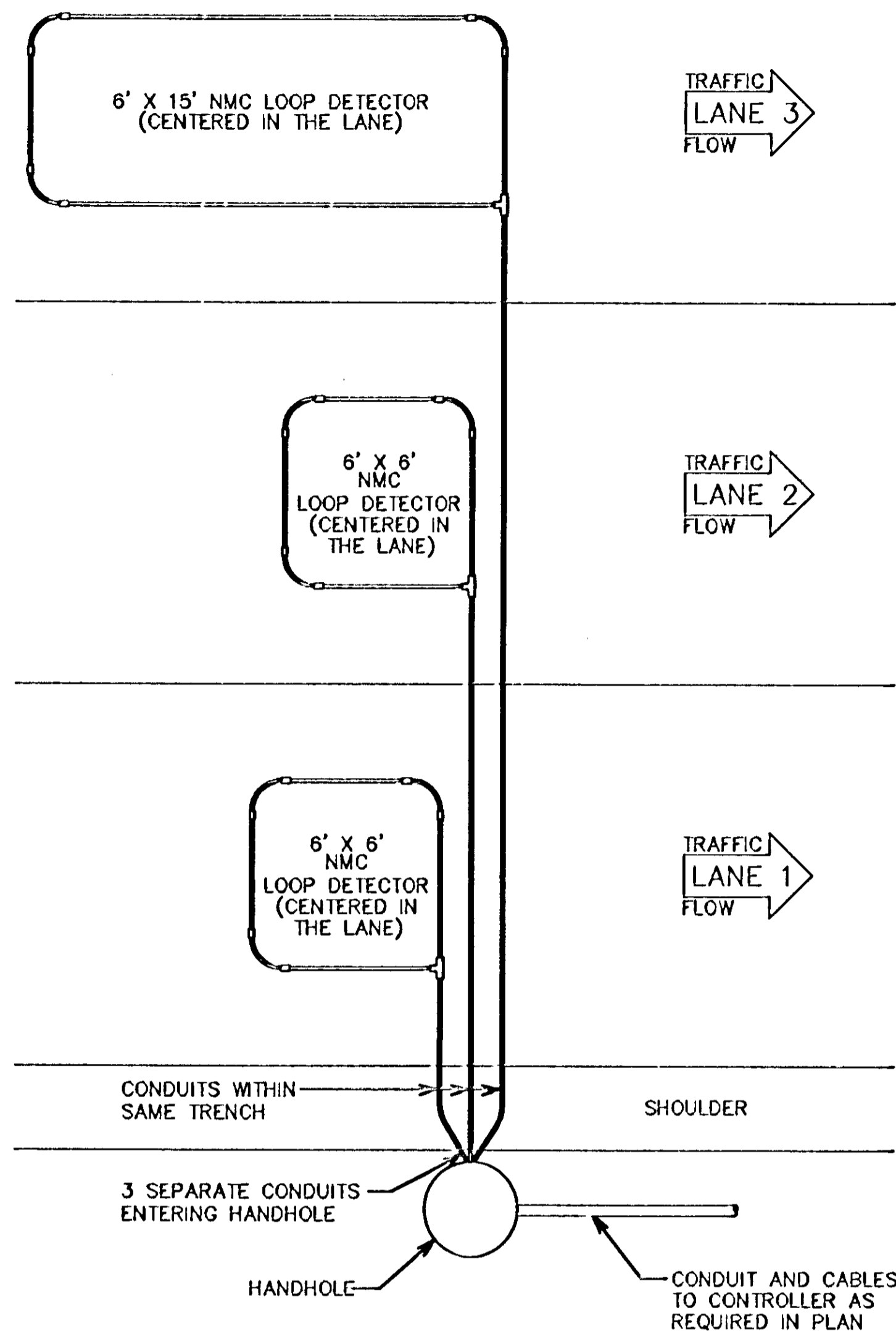


MINNESOTA DEPT OF TRANSPORTATION  
CITY OF COON RAPIDS  
TRAFFIC SIGNAL SYSTEMS B & C  
DETAILS

FILE NO. MNDOT9611  
DATE 3/6/98  
13  
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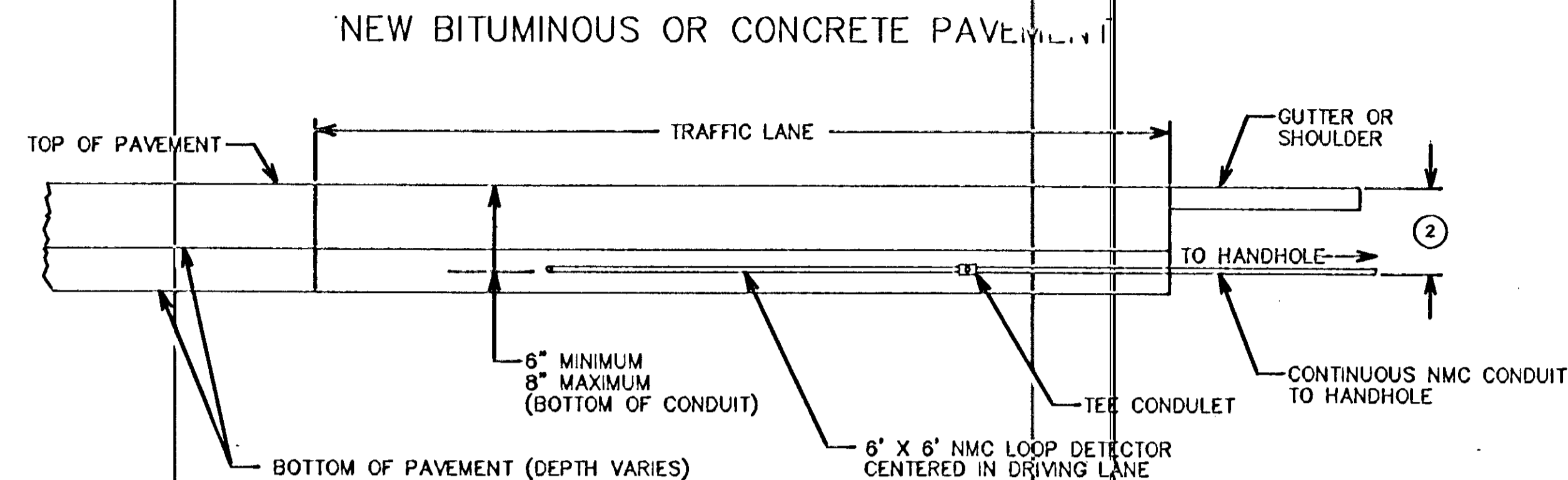
TYPICAL NMC LOOP DETECTOR LAYOUT



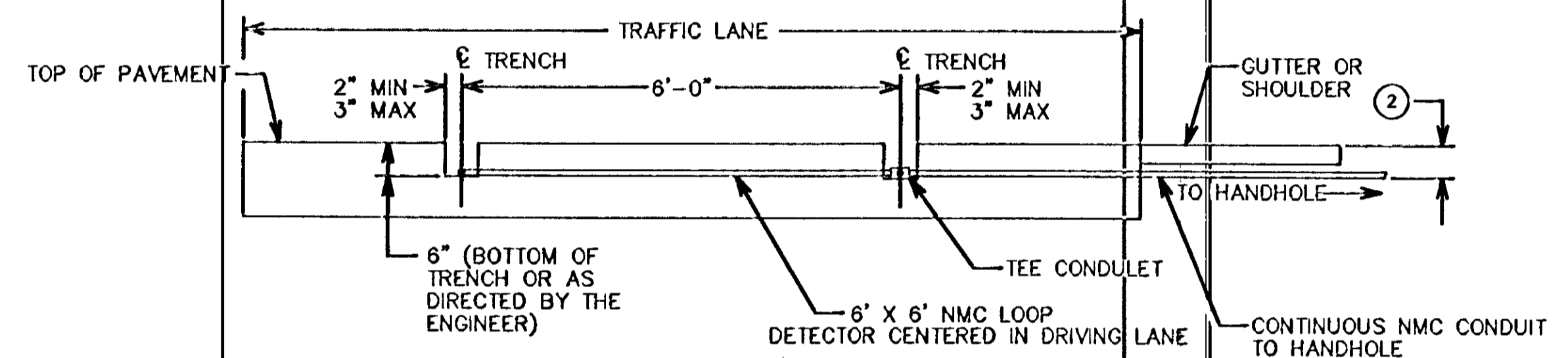
GENERAL NOTES:

1. SEE SPECIAL PROVISIONS FOR REQUIRED LOOP DETECTOR CONDUCTORS AND SPLICE KITS.
2. THE 3/4" NON-METALLIC CONDUIT (NMC) AND FITTINGS SHALL BE SCHEDULE 40 HEAVY WALL RIGID POLYVINYL CHLORIDE (PVC). SEE 3803.
3. THREE CORNERS OF EACH LOOP DETECTOR SHALL BE A 90° FACTORY ELBOW (6" RADIUS). THE FOURTH SHALL BE A NMC TEE CONDULET.
4. APPROVED PVC PRIMER AND CEMENT SHALL BE USED FOR THE PVC JOINTS.
5. ALL SLACK MUST BE REMOVED FROM LOOP DETECTOR CONDUCTORS WITHIN THE NMC.
6. THE LOOP DETECTOR CONDUCTORS (1/C#14) SHALL BE TWISTED THREE TURNS PER FOOT FROM THE NMC TEE CONDULET TO THE HANDHOLE.
7. ATTACH A FERROUS METAL ITEM TO THE INTERIOR OF THE TEE CONDULET COVER.
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 END IN THE HANDHOLE.
11. NO SPLICES ALLOWED IN CONDUIT TO TEE CONDULET.
12. ALL LOOP DETECTORS SHALL HAVE FOUR (4) TURNS OF CONDUCTORS.
13. THE LOOP DETECTOR ROADWAY CONDUCTORS AND THE LOOP DETECTOR LEAD IN CABLE CONDUCTORS SHALL BE PROPERLY PREPARED AND CLEANED BEFORE SPLICING.
14. SPLICE KITS SHALL BE INSTALLED IN HANDHOLES IN SUCH A MANNER AS TO ENSURE THAT EACH SPLICE KIT IS SUSPENDED AND/OR SECURED UNDER THE TOP OF THE HANDHOLE TO THE SATISFACTION OF THE ENGINEER. (PLACING SPLICE KITS ON TOP OF ELECTRICAL CABLES AND CONDUCTORS IS NOT ACCEPTABLE.)
15. TYPICAL SIZE OF LOOP DETECTORS ARE 6' x 6', 6' x 10', 6' x 15', AND 6' x 20'. REFER TO INTERSECTION LAYOUT FOR SPECIFIC LOOP DETECTORS TO BE PLACED.

TYPICAL NMC LOOP DETECTOR INSTALLATION



INPLACE BITUMINOUS PAVEMENT

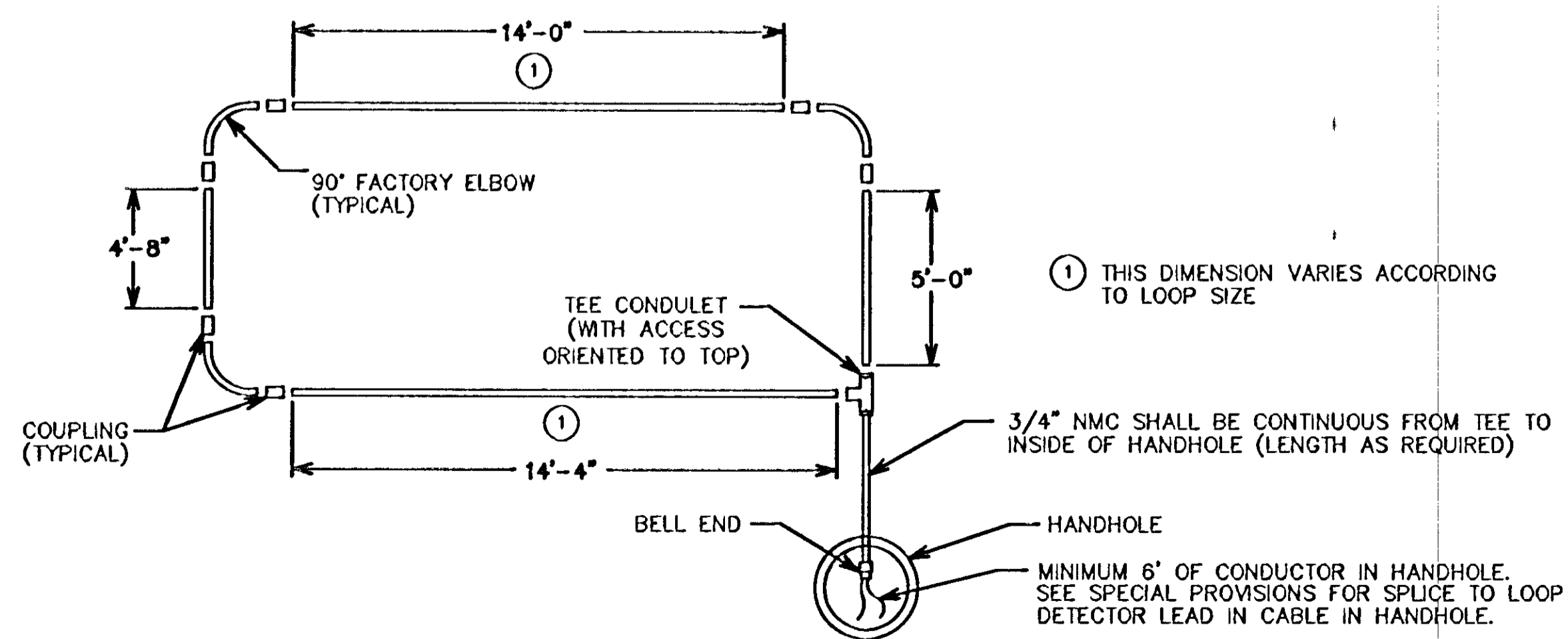


NOTES:

1. USE THE ACTUAL LOOP DETECTOR TO BE PLACED FOR MARKING THE PAVEMENT FOR MILLING LOCATION.
2. MILL PAST THE CENTER OF THE CONDUIT TO BE PLACED.
3. ACHIEVE A MINIMUM 2" VERTICAL EDGE ON ALL CUTS.
4. AN AIR COMPRESSOR UNIT (50 HP) IS REQUIRED FOR REMOVING ALL LOOSE MATERIAL FROM TRENCH PRIOR TO TACK 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. USE MIXTURE TYPE 41 WEARING COURSE (TYPE 41WEA50055) TO BACKFILL THE TRENCH. OTHER WEARING COURSE MIXTURE TYPES ARE ALLOWED WHEN APPROVED BY ENGINEER. (AGGREGATE SIZE "A" IS REQUIRED.)
7. THE USE OF PETROLEUM DISTILLATES AS AN ANTI-ADHESIVE AGENT IS NOT ALLOWED. RELEASE AGENT. REFER TO MN/DOT TECH MEMO NO. 94-16-MRE-05 DATED 3/10/94 FOR ADDITIONAL INFORMATION.
8. 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.
9. 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.
10. 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.

② VARIABLE DEPTH—MAINTAIN DRAINAGE TO HANDHOLE

TYPICAL NMC LOOP DETECTOR DETAIL— (6' X 15' LOOP)



① THIS DIMENSION VARIES ACCORDING TO LOOP SIZE

DRAWN BY:	REVISED BY:	REVISED BY:	AS BUILT BY:
CKD BY:	CKD BY:	CKD BY:	CKD BY:
DATE:	DATE:	DATE:	DATE:

FEDERAL PROJ. NO. 0296(128)  
S.P. 0215-48, 0215-50  
S.P. 02-611-26, 114-020-11

PREFORMED NON-METALLIC CONDUIT  
LOOP DETECTOR DETAILS  
HANSON BLVD AT  
TH 10/47 RAMPS

1	JMG	3/98	REVISED TO CURRENT MNDOT DETAIL				
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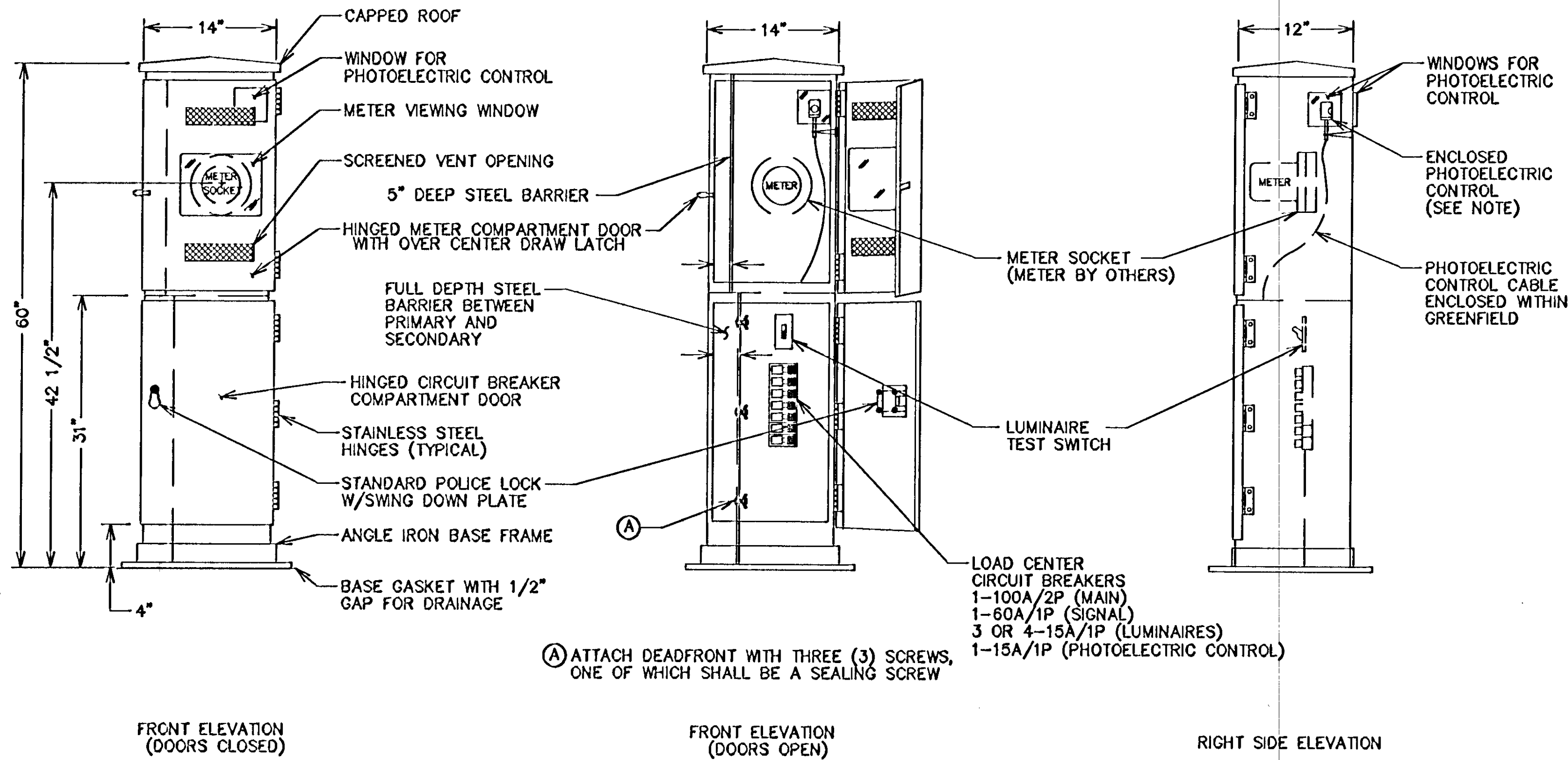
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.  
Date: 3/6/98 Reg. No. 22457



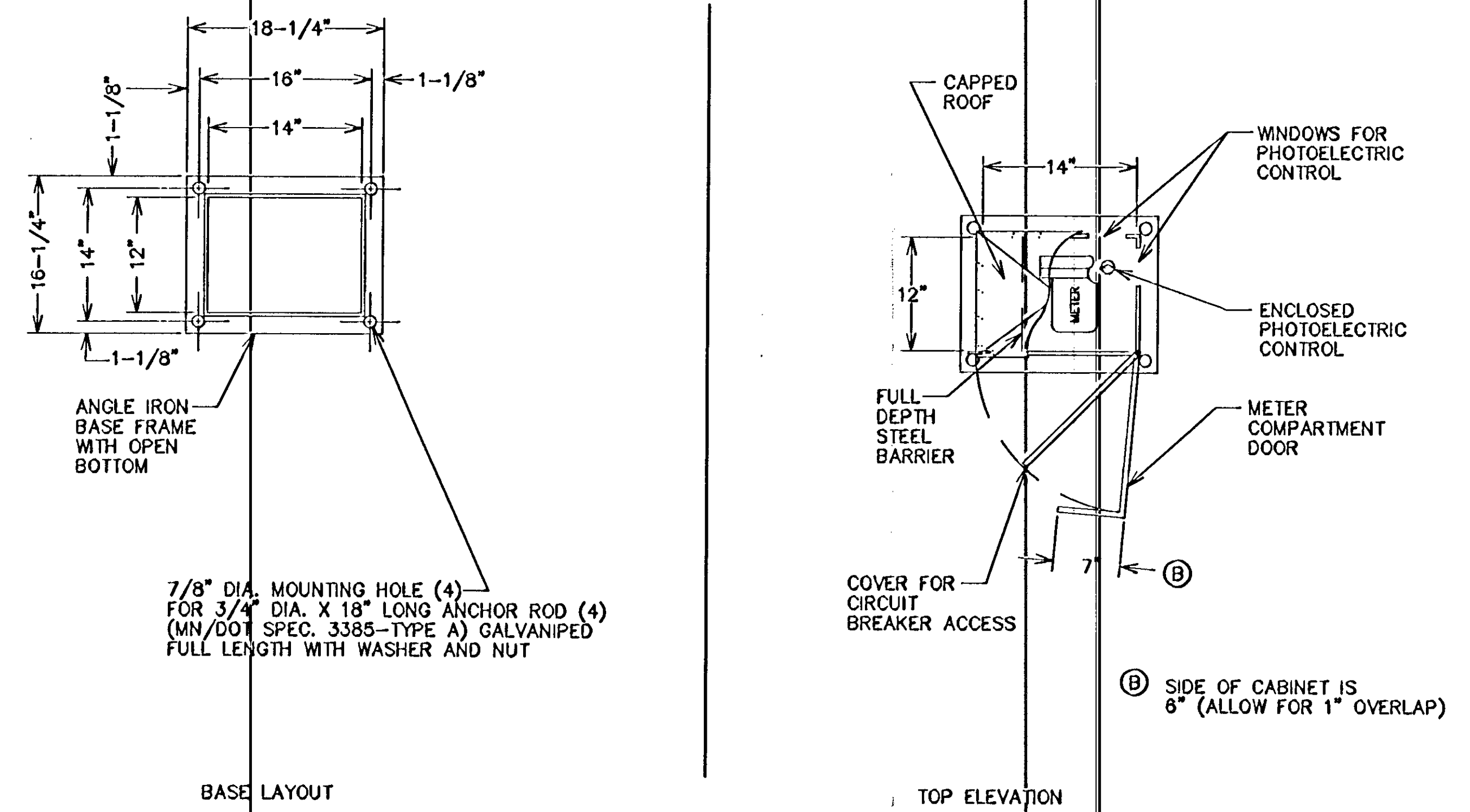
MINNESOTA DEPT OF TRANSPORTATION  
CITY OF COON RAPIDS  
TRAFFIC SIGNAL SYSTEMS B & C  
LOOP DETECTOR DETAILS

FILE NO.	14
MNDOT9611	
DATE	3/6/98
	42

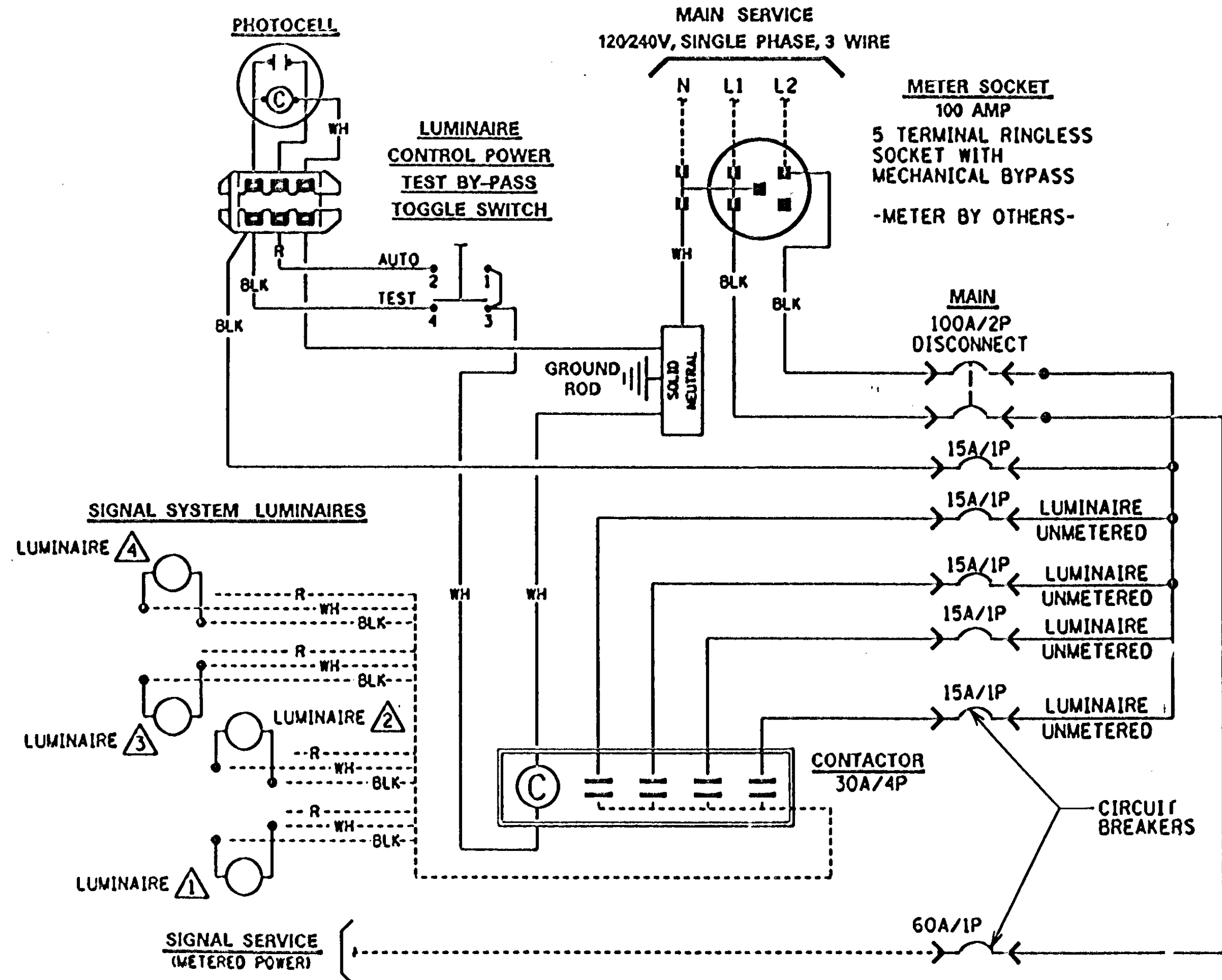
SERVICE CABINET DETAILS



CABINET BASE DETAILS



FEED POINT WIRING DIAGRAM



CONSTRUCTION NOTES

1. THE SERVICE CABINET SHALL BE FABRICATED FROM FORMED AND WELDED NO. 12 GAUGE, COLD ROLLED STEEL.
2. ALL HINGES, HINGE PINS AND LOCKS SHALL BE OF NON-CORRODING MATERIALS.
3. THE SERVICE CABINET DOORS SHALL BE ATTACHED TO THE ENCLOSURE WITH NON-CORRODING TYPE TAMPERPROOF CARRIAGE BOLTS.
4. THE METER COMPARTMENT DOOR SHALL BE SECURED WITH AN OVER CENTER DRAW LATCH AND DUAL LOCKING FIXTURE WITH LOCK.
5. THE CIRCUIT BREAKER COMPARTMENT DOOR SHALL BE SECURED WITH A STANDARD POLICE LOCK EQUIPPED WITH A SWING DOWN PLATE WITH TWO (2) KEYS.
6. BOTH DOOR OPENINGS SHALL BE SEALED WITH NEOPRENE GASKETS TO FORM A COMPLETE SEAL WITH THE ENCLOSURE.
7. THE VIEWING WINDOW (7" X 7" MINIMUM) AND PHOTOELECTRIC CONTROL WINDOW (4" X 4") SHALL BE CLEAR LEXAN MATERIAL.
8. THE SERVICE CABINET SHALL BE PROTECTED INSIDE AND OUTSIDE WITH A RUST INHIBITING RED IRON OXIDE ENAMEL PRIMER AND FINISHED WITH AN OVEN BAKED ENAMEL, SILVER.
9. CIRCUIT BREAKERS SHALL BE 120/240 VOLT AC, 60 Hz AND SHALL BE CLEARLY MARKED WITH THE "ON" AND "OFF" POSITIONS AND IDENTIFIED WITH THE LOAD WHICH IT IS CARRYING (E.G. "SIGNALS" OR "LIGHTING").
10. ALL CIRCUIT BREAKERS SHALL BE CLEARLY MARKED IN A MANNER THAT WILL NOT DETERIORATE WITH MOISTURE OR AGE.
11. SHORT CIRCUIT RATING - 10,000 AIC SYMMETRICAL.
12. PROVIDE CLEARANCE TO INSTALL OR REMOVE PHOTOELECTRIC CONTROL.
13. PHOTOELECTRIC CONTROL LENS SHALL BE ORIENTED TO ELIMINATE INTERFERENCE BY MANMADE LIGHT SOURCES. PHOTOELECTRIC CONTROL LENS SHALL NORMALLY FACE NORTH AND EAST.
14. ALL CONDUIT ENTERING FOUNDATION SHALL BE SEALED WITH AN APPROVED DUCT SEALER.
15. THE SERVICE CABINET SHALL BE U.L. LISTED AND APPROVED FOR USE AS OUTDOOR WEATHER PROOF SERVICE ENTRANCE EQUIPMENT.
16. THE SERVICE CABINET SHALL BE WELDED TO THE BASE IN ACCORDANCE WITH U.L. STANDARDS.
17. RED CONDUCTOR OF 3/C#12 WIRE USED FOR LUMINAIRES MUST BE TAPED WITH GREEN TAPE AT BOTH THE ORIGIN AND TERMINUS OF THE CONDUCTOR AND IDENTIFIED AS GROUNDING CONDUCTOR.

DRAWN BY:	REVISED BY:	REVISED BY:	AS BUILT BY:
CKD BY:	CKD BY:	CKD BY:	CKD BY:
DATE:	DATE:	DATE:	DATE:

SIGNAL SERVICE CABINET DETAILS  
HANSON BLVD AT TH 10/47 RAMPS

FEDERAL PROJ. NO. 0296(128)  
S.P. 0215-48, 0215-50  
S.P. 02-611-26, 114-020-11

1	JMG	3/98	REVISED TO CURRENT MNDOT DETAIL			
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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 Registered Professional Engineer under the laws of the state of Minnesota.  
Date: 3/6/98 Reg. No. 22457



MINNESOTA DEPT OF TRANSPORTATION  
CITY OF COON RAPIDS  
TRAFFIC SIGNAL SYSTEMS B & C  
SERVICE CABINET DETAILS

FILE NO.	15
MNDOT9611	
DATE	3/6/98
	42

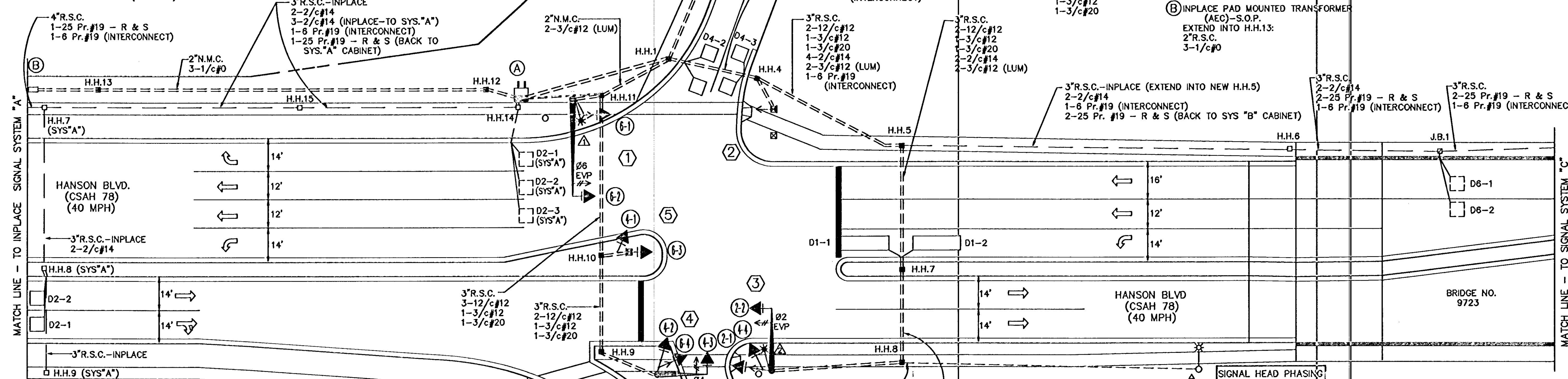
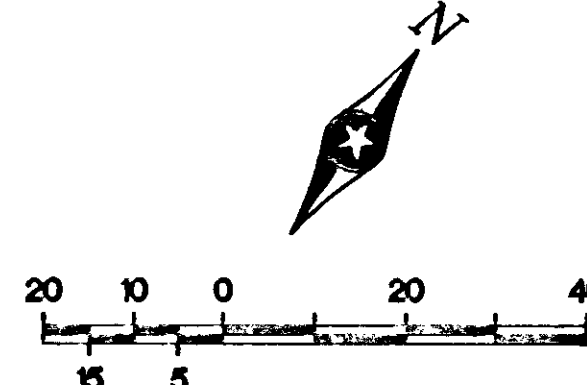
NOTES:

- 1) LOCATION OF POLES, LOOP DETECTORS, EQUIPMENT PAD AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY Mn/DOT DISTRICT TRAFFIC OFFICE PERSONNEL.
- 2) EACH SIGNAL FACE SHALL HAVE BACKGROUND SHIELD.
- 3) EACH PEDESTRIAN INDICATION SHALL BE A ONE SECTION HAND/WALKING PERSON INDICATION, WITH THE HAND INDICATION BEING AN LED INDICATION. SEE SPECIAL PROVISIONS.
- 4) ALL YELLOW AND GREEN VEHICULAR SIGNAL INDICATION LENSES AND ALL WALK PEDESTRIAN SIGNAL INDICATION LENSES SHALL BE GLASS LENSES.
- 5) ALL NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS AND SHALL CONTAIN A STATE FURNISHED "BALL LOCATOR". SEE SPECIAL PROVISIONS.
- 6) INPLACE HANDHOLES 8,14,15,7 (SYSTEM "A") AND 8 (SYSTEM "A") SHALL ALSO CONTAIN A STATE FURNISHED "BALL LOCATOR". SEE SPECIAL PROVISIONS.
- 7) SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGN PANELS TO BE FURNISHED AND INSTALLED BY CONTRACTOR (INCIDENTAL TO ITEM NO.2565.511).
- 8) SEE SPECIAL PROVISIONS FOR INFORMATION REGARDING STATE FURNISHED MATERIALS.
- 9) SEE SPECIAL PROVISIONS REGARDING REMOVAL OF INPLACE SIGNAL SYSTEM BY CONTRACTOR (INCIDENTAL TO ITEM NO. 2565.511).
- 10) HAULING OF SALVAGED SIGNAL EQUIPMENT SHALL BE MEASURED AND PAID FOR SEPARATELY FROM ITEM NO. 2565.511. SEE ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
- 11) ALL NEW LOOP DETECTORS SHALL BE INSTALLED IN NON-METALLIC CONDUIT. SEE SPECIAL PROVISIONS AND DETAILS.
- 12) (INTERCONNECT) DENOTES ITEMS TO BE MEASURED AND PAID FOR SEPARATELY FROM ITEM NO.2565.511. SEE ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
- 13) CONTRACTOR SHALL PROVIDE EXTENDED BRACKETS FOR EACH POLE MOUNTED VEHICLE SIGNAL FACE.
- 14) A 3/4 INCH HALF COUPLING, 3/4 INCH PIPE NIPPLE AND CONDUIT OUTLET BODY SHALL BE FURNISHED AND INSTALLED APPROX. 6 FEET FROM THE LEFT END OF EACH MAST ARM (FOR EVP).

LOOP DETECTORS		
NUMBER	SIZE (FT.)	LOCATION
D1-1	6x20	0'
D1-2	6x20	30'
D2-1	6x8	250'
D2-2	6x8	250'
D4-1	2-6x8	250'
D4-2	2-6x8	5' & 20'
D4-3	2-6x8	5' & 20'
* D6-1	6x8	250'
* D6-2	6x8	250'

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

\* = INPLACE SAW-CUT LOOP DETECTOR, REUSE INPLACE.



① PA100 POLE FOUNDATION  
 INSTALL TYPE PA100-A-40-D40-9 (DAVIT AT 350")  
 (FURNISHED BY STATE)  
 LUMINAIRE-200 WATT H.P.S. WITH PEC  
 AND CHECK SWITCH  
 ONE WAY SIGNAL-OVERHEAD  
 TYPE 10B-POLE MOUNTED 0"  
 R9-3a SIGN PANEL (18"x18")-POLE MOUNTED  
 (FACING POLE 5)  
 R8-1R SIGN PANEL (36"x12")-POLE MOUNTED 180"  
 TYPE "D" SIGN PANEL (72"x66")-OVERHEAD (D-1)  
 ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (Ø6)  
 EXTEND INTO H.H.11:  
 3"R.S.C.  
 1-12/c#12  
 2-3/c#12  
 1-3/c#20  
 1-3/c#12 (LUM)

③ PA85 POLE FOUNDATION  
 INSTALL TYPE PA85-A-25-D40-9 (DAVIT AT 350")  
 (FURNISHED BY STATE)  
 LUMINAIRE-200 WATT H.P.S. WITH PEC  
 AND CHECK SWITCH  
 ONE WAY SIGNAL-OVERHEAD  
 TYPE 20B-POLE MOUNTED 270"  
 R9-3a SIGN PANEL (18"x18")-POLE MOUNTED  
 (FACING POLE 2)  
 R8-1L SIGN PANEL (36"x12")-POLE MOUNTED 0"  
 2-TYPE "D" SIGN PANELS (72"x66")-OVERHEAD (D-2,3)  
 ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (Ø2)  
 EXTEND INTO H.H.8:  
 3"R.S.C.  
 2-12/c#12  
 1-3/c#12  
 1-3/c#20  
 1-3/c#12 (LUM)

④ PA85 POLE FOUNDATION  
 INSTALL TYPE PA85-A-20  
 (FURNISHED BY STATE)  
 ONE WAY SIGNAL-OVERHEAD  
 TYPE 20B-POLE MOUNTED 270"  
 R9-3a SIGN PANEL (18"x18")-  
 POLE MOUNTED (FACING POLE 5)  
 2-R8-1 SIGN PANELS (36"x12")-  
 POLE MOUNTED 0" AND 180"  
 TYPE "D" SIGN PANEL (90"x18")-  
 OVERHEAD (D-4)  
 ONE WAY EVP DETECTOR AND LIGHT-  
 OVERHEAD (Ø4)  
 EXTEND INTO H.H.9:  
 3"R.S.C.  
 2-12/c#12  
 1-3/c#12  
 1-3/c#20

Ⓐ EQUIPMENT PAD - SEE DETAILS  
 INSTALL CONTROLLER AND CABINET (FURNISHED BY STATE)  
 SERVICE CABINET

CONTROLLER CABINET TO H.H.11: 4"R.S.C.  
 2-12/c#12  
 2-3/c#12  
 1-3/c#20  
 7-2/c#14  
 1-6 Pr.#19 (INTERCONNECT)

SERVICE CABINET TO H.H.11: 2"R.S.C.  
 3-3/c#12 (LUM)

SERVICE CABINET TO H.H.12: 2"R.S.C.  
 3-1/c#0

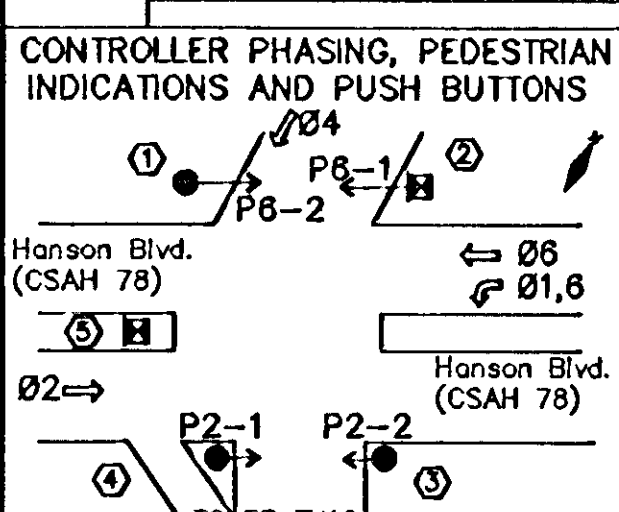
CONTROLLER CABINET TO H.H.11: 4"R.S.C.  
 4-12/c#12  
 3-3/c#12  
 2-3/c#20

BETWEEN SERVICE CABINET AND CONTROLLER CABINET: 1 1/4"R.S.C.  
 2-1/c#6  
 1-1/c#6 Br.Gr.

CONTROLLER CABINET TO H.H.14: 3"R.S.C.  
 2-2/c#14  
 1-6 Pr.#19 (INTERCONNECT)

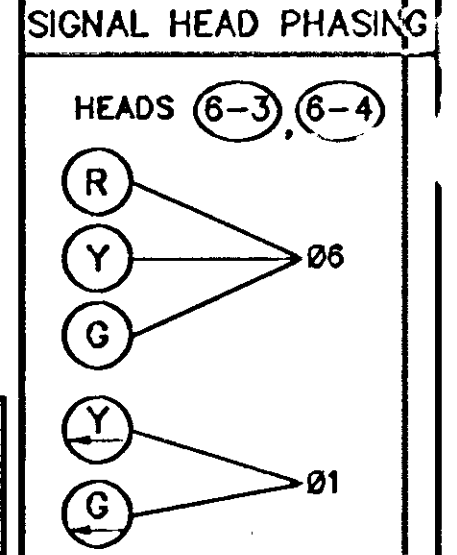
STUB OUT 1-2"R.S.C. AND 1-3"R.S.C. FROM CONTROLLER CABINET TO WEST (THREAD AND CAP BOTH ENDS-FOR FUTURE USE)

Ⓑ INPLACE PAD MOUNTED TRANSFORMER (AEC)-S.O.P.  
 EXTEND INTO H.H.13:  
 2"R.S.C.  
 3-1/c#0



SIGNAL SYSTEM OPERATIONS:  
 - SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.  
 - NORMAL OPERATION SHALL BE 3 PHASE, WITH PHASE 1 BEING A PROTECTED/PERMISSIVE LEFT TURN PHASE.  
 - VEHICLE AND PEDESTRIAN SIGNAL PHASES 2 AND 6 SHALL OPERATE ON RECALL.

⑤ PEDESTAL FOUNDATION  
 INSTALL 10" PEDESTAL POLE AND BASE (FURNISHED BY STATE)  
 TYPE 2A  
 2-R9-3a SIGN PANELS (18"x18")-  
 POLE MOUNTED (FACING POLES 1 AND 4)  
 R10-12 SIGN PANEL (24"x30")-  
 POLE MOUNTED  
 EXTEND INTO H.H.10:  
 3"R.S.C.  
 1-12/c#12



SIGNAL FACE	ALL SIGNAL INDICATIONS SHALL BE 12"					
	LED R	Y	G	LED R	Y	G
2-1, 2-2	•	•	•	•	•	•
4-1, 4-2, 4-3, 4-4	•	•	•	•	•	•
6-1, 6-2	•	•	•	•	•	•
6-3, 6-4	•	•	•	•	•	•

NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED
1	JMG	7/97	PER MN/DOT COMMENTS			

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: 3/8/98 Reg. No. 22457



MINNESOTA DEPT OF TRANSPORTATION  
 CITY OF COON RAPIDS

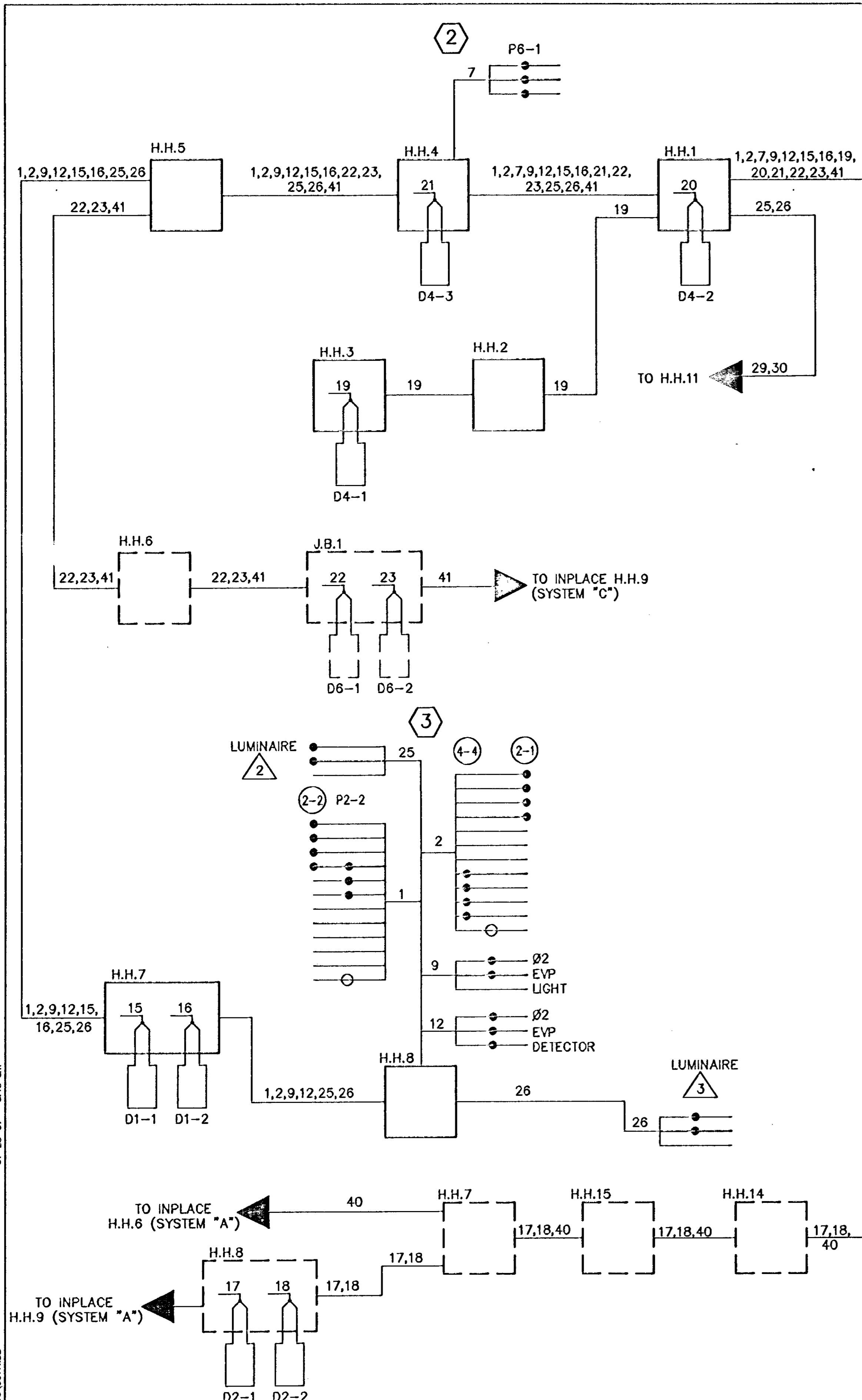
TRAFFIC SIGNAL SYSTEM "B"  
 INTERSECTION LAYOUT  
 HANSON BLVD.(CSAH 78) AT T.H.10 SOUTH RAMPS

FILE NO. MNDOT9611 16  
 DATE 3/6/98 42

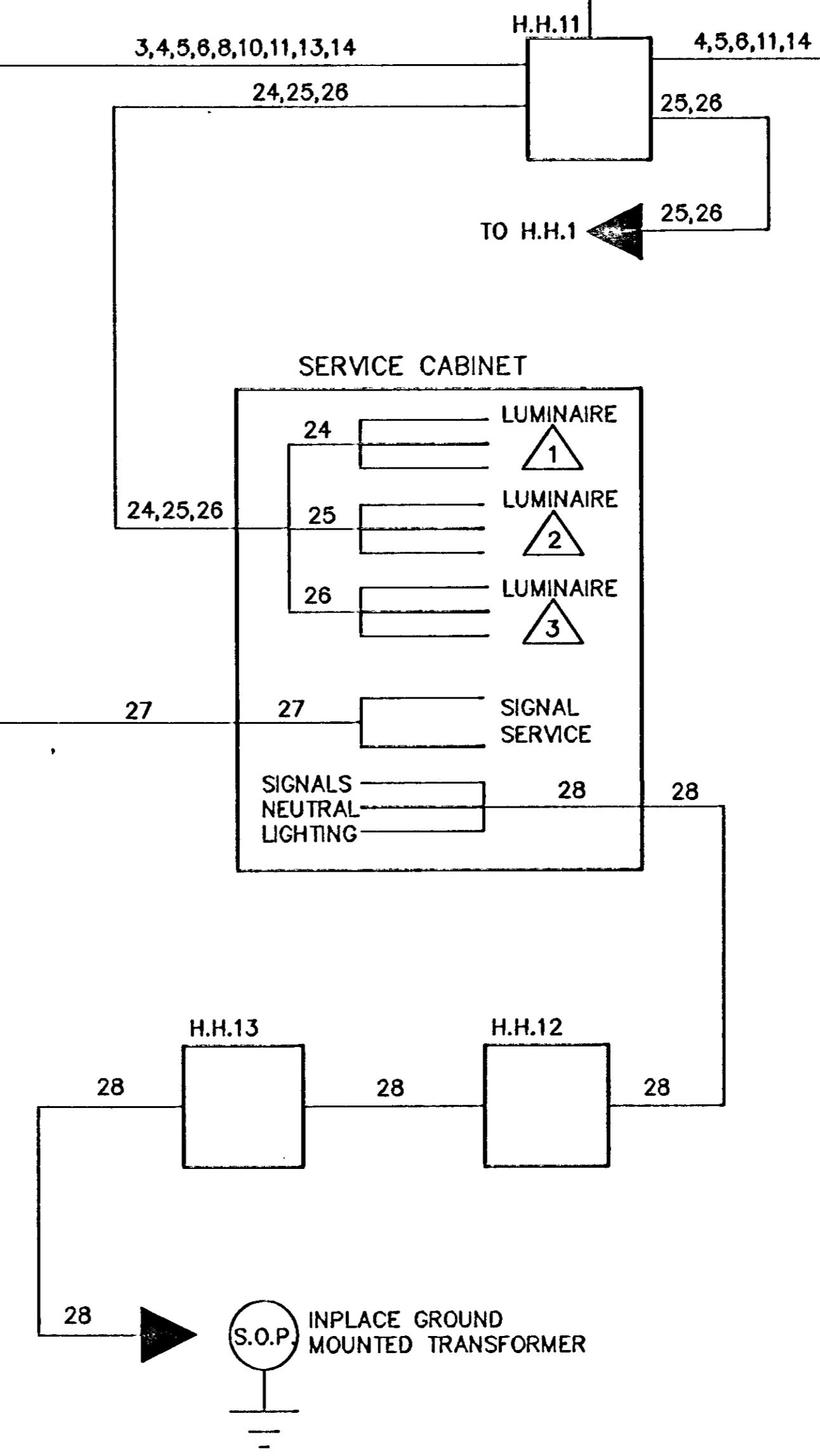
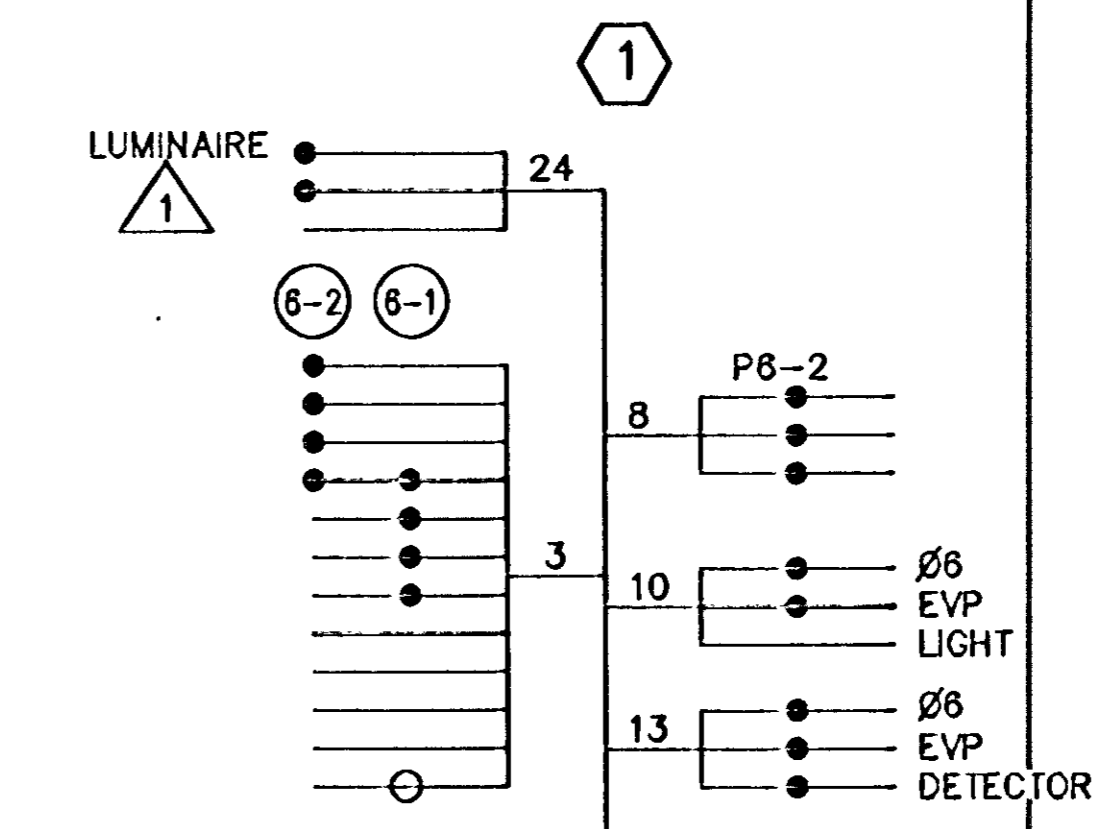
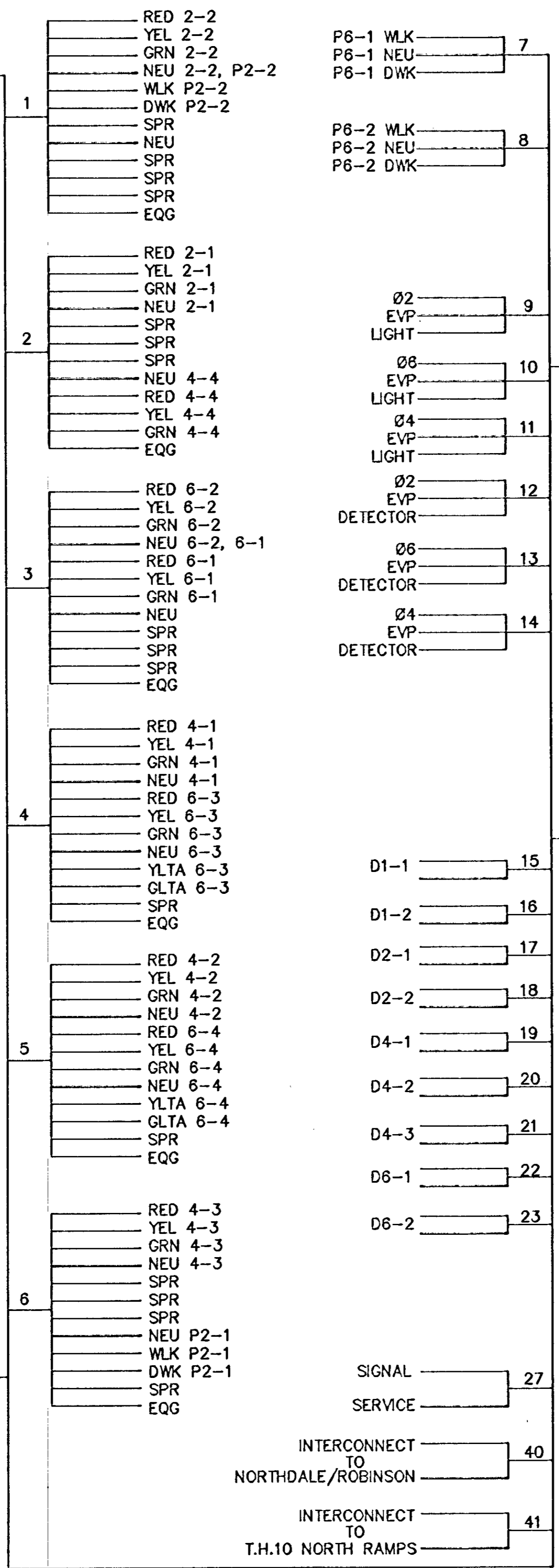
FEDERAL PROJ. NO. 0296(128)  
 S.P. 0215-48, 0215-50  
 S.P. 02-611-26, 114-020-11

SYSTEM I.D. 20218





CONTROLLER CABINET



CONDUCTOR COLOR CODING

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

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

FEDERAL PROJ. NO. 0296(128)  
S.P. 0215-48, 0215-50  
S.P. 02-611-26, 114-020-11

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.

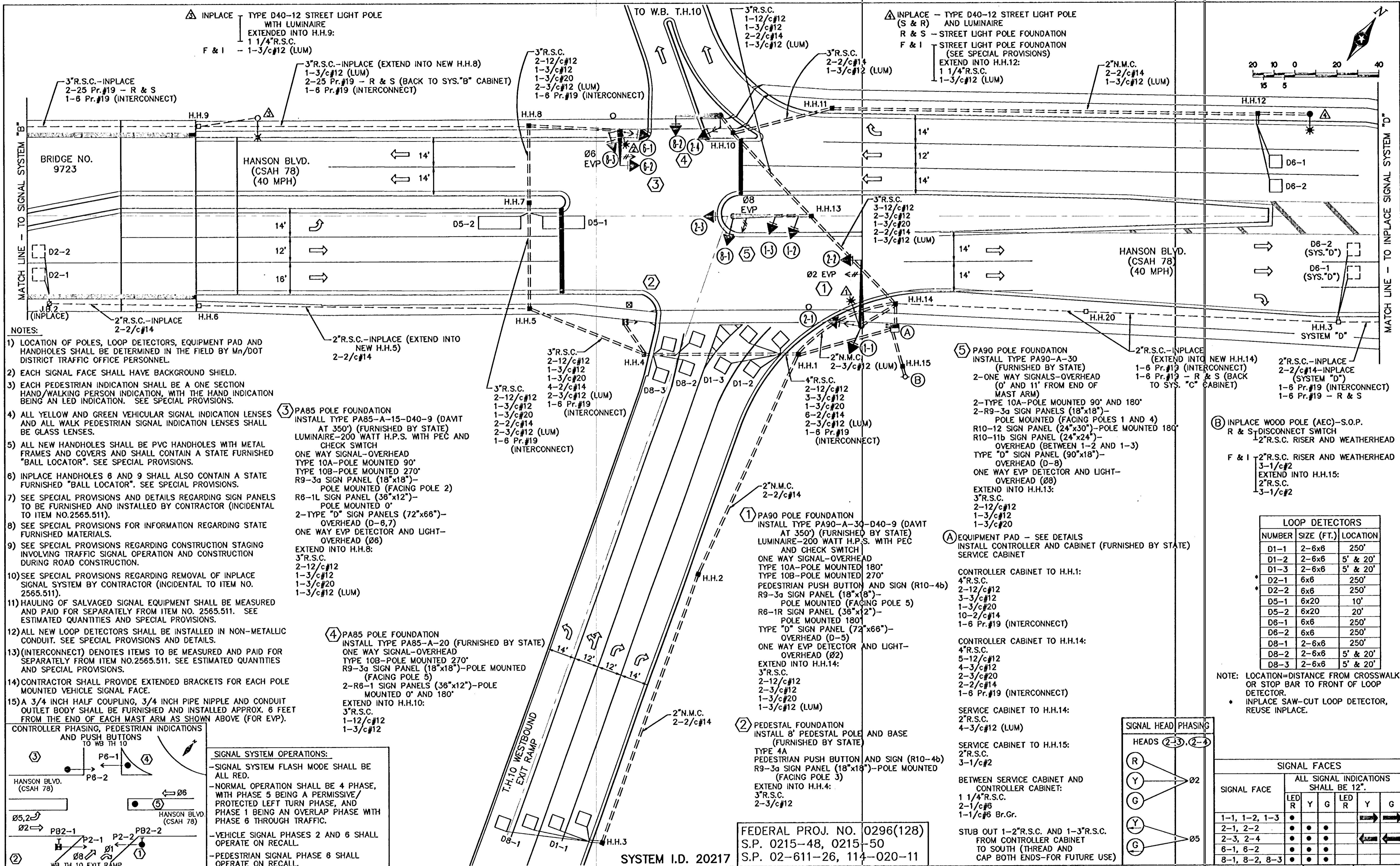
Date: 3/6/98 Reg. No. 22457



MINNESOTA DEPT OF TRANSPORTATION  
CITY OF COON RAPIDS

TRAFFIC SIGNAL SYSTEM "B"  
FIELD WIRING DIAGRAM  
HANSON BLVD.(CSAH 78) AT T.H.10 SOUTH RAMPS

FILE NO.	17
MNDOT9611	
DATE	3/6/98
	42



- NOTES:**
- 1) LOCATION OF POLES, LOOP DETECTORS, EQUIPMENT PAD AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY Mn/DOT DISTRICT TRAFFIC OFFICE PERSONNEL.
  - 2) EACH SIGNAL FACE SHALL HAVE BACKGROUND SHIELD.
  - 3) EACH PEDESTRIAN INDICATION SHALL BE A ONE SECTION HAND/WALKING PERSON INDICATION, WITH THE HAND INDICATION BEING AN LED INDICATION. SEE SPECIAL PROVISIONS.
  - 4) ALL YELLOW AND GREEN VEHICULAR SIGNAL INDICATION LENSES AND ALL WALK PEDESTRIAN SIGNAL INDICATION LENSES SHALL BE GLASS LENSES.
  - 5) ALL NEW HANDHOLES SHALL BE PVC HANDHOLES WITH METAL FRAMES AND COVERS AND SHALL CONTAIN A STATE FURNISHED "BALL LOCATOR". SEE SPECIAL PROVISIONS.
  - 6) INPLACE HANDHOLES 6 AND 9 SHALL ALSO CONTAIN A STATE FURNISHED "BALL LOCATOR". SEE SPECIAL PROVISIONS.
  - 7) SEE SPECIAL PROVISIONS AND DETAILS REGARDING SIGN PANELS TO BE FURNISHED AND INSTALLED BY CONTRACTOR (INCIDENTAL TO ITEM NO. 2565.511).
  - 8) SEE SPECIAL PROVISIONS FOR INFORMATION REGARDING STATE FURNISHED MATERIALS.
  - 9) SEE SPECIAL PROVISIONS REGARDING CONSTRUCTION STAGING INVOLVING TRAFFIC SIGNAL OPERATION AND CONSTRUCTION DURING ROAD CONSTRUCTION.
  - 10) SEE SPECIAL PROVISIONS REGARDING REMOVAL OF INPLACE SIGNAL SYSTEM BY CONTRACTOR (INCIDENTAL TO ITEM NO. 2565.511).
  - 11) HAULING OF SALVAGED SIGNAL EQUIPMENT SHALL BE MEASURED AND PAID FOR SEPARATELY FROM ITEM NO. 2565.511. SEE ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
  - 12) ALL NEW LOOP DETECTORS SHALL BE INSTALLED IN NON-METALLIC CONDUIT. SEE SPECIAL PROVISIONS AND DETAILS.
  - 13) (INTERCONNECT) DENOTES ITEMS TO BE MEASURED AND PAID FOR SEPARATELY FROM ITEM NO. 2565.511. SEE ESTIMATED QUANTITIES AND SPECIAL PROVISIONS.
  - 14) CONTRACTOR SHALL PROVIDE EXTENDED BRACKETS FOR EACH POLE MOUNTED VEHICLE SIGNAL FACE.
  - 15) A 3/4 INCH HALF COUPLING, 3/4 INCH PIPE NIPPLE AND CONDUIT OUTLET BODY SHALL BE FURNISHED AND INSTALLED APPROX. 6 FEET FROM THE END OF EACH MAST ARM AS SHOWN ABOVE (FOR EVP).

- ③ PA85 POLE FOUNDATION**  
 INSTALL TYPE PA85-A-15-D40-9 (DAVIT AT 350') (FURNISHED BY STATE) LUMINAIRE-200 WATT H.P.S. WITH PEC AND CHECK SWITCH  
 ONE WAY SIGNAL-OVERHEAD TYPE 10A-POLE MOUNTED 90°  
 TYPE 10B-POLE MOUNTED 270°  
 R9-3a SIGN PANEL (18"x18")-POLE MOUNTED (FACING POLE 2)  
 R6-1L SIGN PANEL (36"x12")-POLE MOUNTED 0°  
 2-TYPE "D" SIGN PANELS (72"x66")-OVERHEAD (D-6,7)  
 ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (Ø6)  
 EXTEND INTO H.H.8:  
 3"R.S.C. 2-12/c#12  
 1-3/c#12  
 1-3/c#20  
 1-3/c#12 (LUM)
- ④ PA85 POLE FOUNDATION**  
 INSTALL TYPE PA85-A-20 (FURNISHED BY STATE) ONE WAY SIGNAL-OVERHEAD TYPE 10B-POLE MOUNTED 270°  
 R9-3a SIGN PANEL (18"x18")-POLE MOUNTED (FACING POLE 5)  
 2-R6-1 SIGN PANELS (36"x12")-POLE MOUNTED 0° AND 180°  
 EXTEND INTO H.H.10:  
 3"R.S.C. 1-12/c#12  
 1-3/c#12

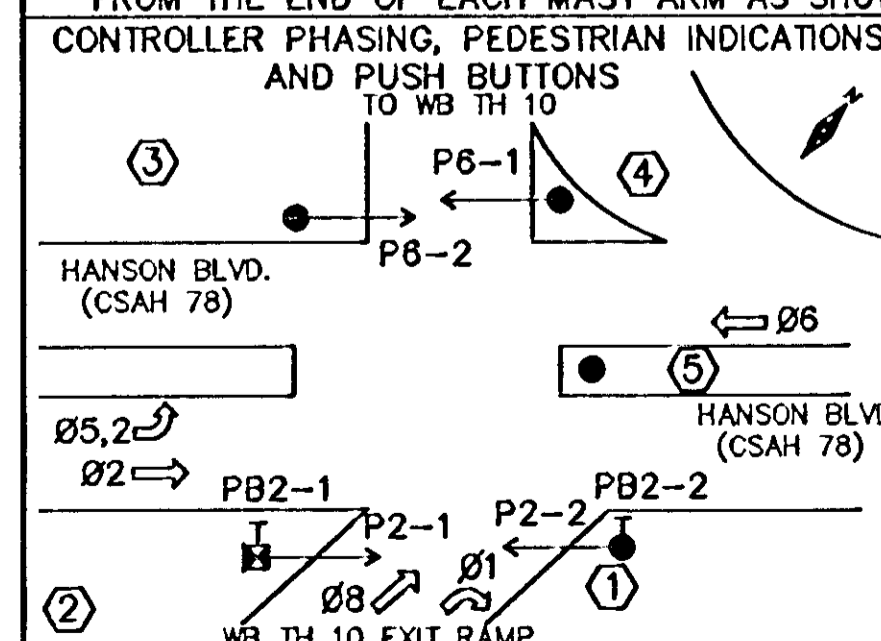
- ⑤ PA90 POLE FOUNDATION**  
 INSTALL TYPE PA90-A-30 (DAVIT AT 350') (FURNISHED BY STATE) LUMINAIRE-200 WATT H.P.S. WITH PEC AND CHECK SWITCH  
 ONE WAY SIGNAL-OVERHEAD TYPE 10A-POLE MOUNTED 180°  
 TYPE 10B-POLE MOUNTED 270°  
 PEDESTRIAN PUSH BUTTON AND SIGN (R10-4b)  
 R9-3a SIGN PANEL (18"x18")-POLE MOUNTED (FACING POLE 5)  
 R6-1R SIGN PANEL (36"x12")-POLE MOUNTED 180°  
 TYPE "D" SIGN PANEL (72"x66")-OVERHEAD (D-5)  
 ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (Ø2)  
 EXTEND INTO H.H.14:  
 3"R.S.C. 2-12/c#12  
 2-3/c#12  
 1-3/c#20  
 1-3/c#12 (LUM)
- ⑥ PEDESTAL FOUNDATION**  
 INSTALL 8' PEDESTAL POLE AND BASE (FURNISHED BY STATE)  
 TYPE 4A PEDESTRIAN PUSH BUTTON AND SIGN (R10-4b)  
 R9-3a SIGN PANEL (18"x18")-POLE MOUNTED (FACING POLE 3)  
 EXTEND INTO H.H.4:  
 3"R.S.C. 2-3/c#12

- ⑦ PA90 POLE FOUNDATION**  
 INSTALL TYPE PA90-A-30-D40-9 (DAVIT AT 350') (FURNISHED BY STATE) LUMINAIRE-200 WATT H.P.S. WITH PEC AND CHECK SWITCH  
 ONE WAY SIGNAL-OVERHEAD TYPE 10A-POLE MOUNTED 180°  
 TYPE 10B-POLE MOUNTED 270°  
 PEDESTRIAN PUSH BUTTON AND SIGN (R10-4b)  
 R9-3a SIGN PANEL (18"x18")-POLE MOUNTED (FACING POLE 5)  
 R6-1R SIGN PANEL (36"x12")-POLE MOUNTED 180°  
 TYPE "D" SIGN PANEL (72"x66")-OVERHEAD (D-5)  
 ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (Ø2)  
 EXTEND INTO H.H.14:  
 3"R.S.C. 2-12/c#12  
 2-3/c#12  
 1-3/c#20  
 1-3/c#12 (LUM)

- ⑧ PA90 POLE FOUNDATION**  
 INSTALL TYPE PA90-A-30-D40-9 (DAVIT AT 350') (FURNISHED BY STATE) LUMINAIRE-200 WATT H.P.S. WITH PEC AND CHECK SWITCH  
 ONE WAY SIGNAL-OVERHEAD TYPE 10A-POLE MOUNTED 180°  
 TYPE 10B-POLE MOUNTED 270°  
 PEDESTRIAN PUSH BUTTON AND SIGN (R10-4b)  
 R9-3a SIGN PANEL (18"x18")-POLE MOUNTED (FACING POLE 5)  
 R6-1R SIGN PANEL (36"x12")-POLE MOUNTED 180°  
 TYPE "D" SIGN PANEL (72"x66")-OVERHEAD (D-5)  
 ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (Ø2)  
 EXTEND INTO H.H.14:  
 3"R.S.C. 2-12/c#12  
 2-3/c#12  
 1-3/c#20  
 1-3/c#12 (LUM)

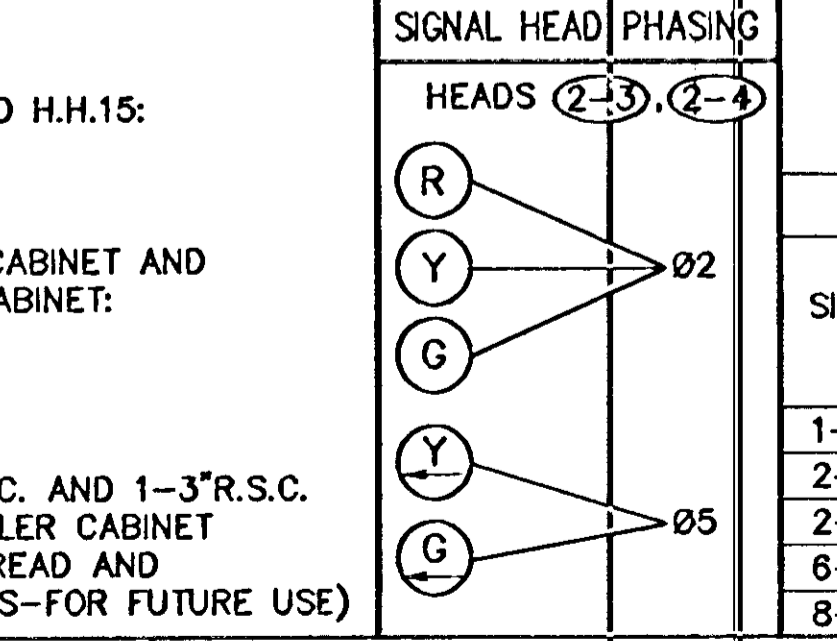
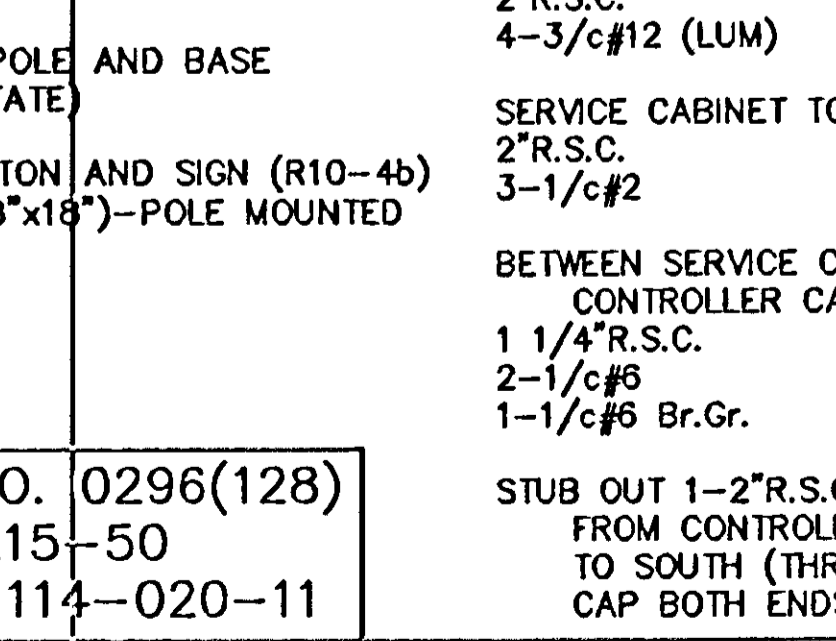
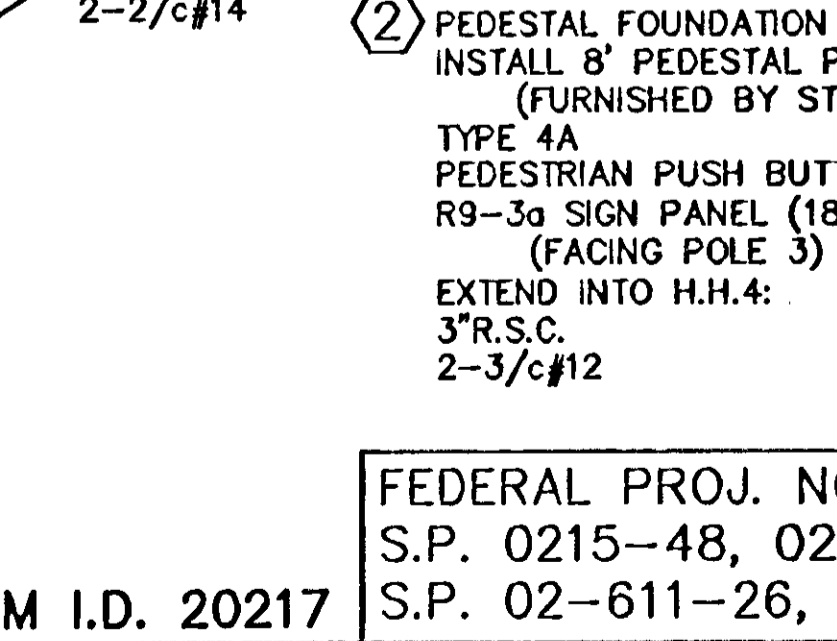
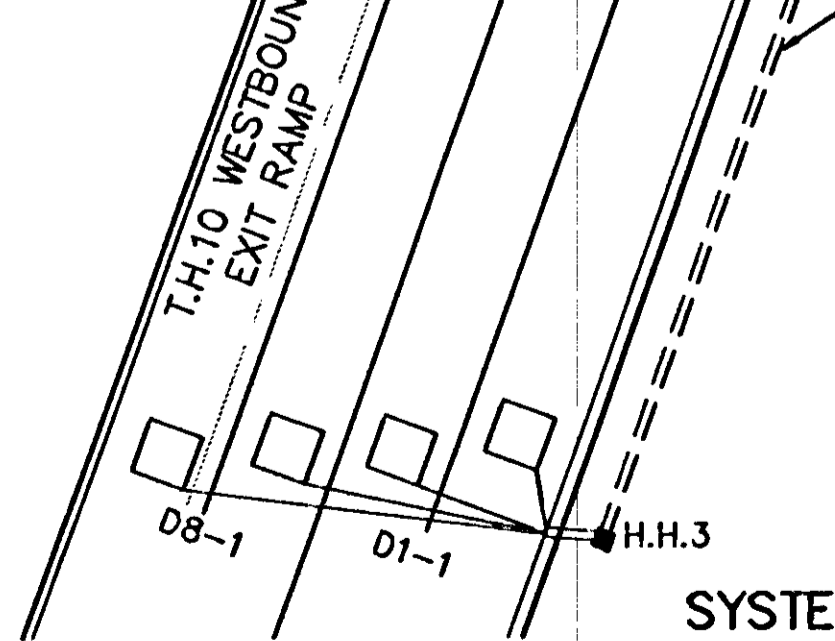
- ⑨ PA90 POLE FOUNDATION**  
 INSTALL TYPE PA90-A-30-D40-9 (DAVIT AT 350') (FURNISHED BY STATE) LUMINAIRE-200 WATT H.P.S. WITH PEC AND CHECK SWITCH  
 ONE WAY SIGNAL-OVERHEAD TYPE 10A-POLE MOUNTED 180°  
 TYPE 10B-POLE MOUNTED 270°  
 PEDESTRIAN PUSH BUTTON AND SIGN (R10-4b)  
 R9-3a SIGN PANEL (18"x18")-POLE MOUNTED (FACING POLE 5)  
 R6-1R SIGN PANEL (36"x12")-POLE MOUNTED 180°  
 TYPE "D" SIGN PANEL (72"x66")-OVERHEAD (D-5)  
 ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (Ø2)  
 EXTEND INTO H.H.14:  
 3"R.S.C. 2-12/c#12  
 2-3/c#12  
 1-3/c#20  
 1-3/c#12 (LUM)

- ⑩ PA90 POLE FOUNDATION**  
 INSTALL TYPE PA90-A-30-D40-9 (DAVIT AT 350') (FURNISHED BY STATE) LUMINAIRE-200 WATT H.P.S. WITH PEC AND CHECK SWITCH  
 ONE WAY SIGNAL-OVERHEAD TYPE 10A-POLE MOUNTED 180°  
 TYPE 10B-POLE MOUNTED 270°  
 PEDESTRIAN PUSH BUTTON AND SIGN (R10-4b)  
 R9-3a SIGN PANEL (18"x18")-POLE MOUNTED (FACING POLE 5)  
 R6-1R SIGN PANEL (36"x12")-POLE MOUNTED 180°  
 TYPE "D" SIGN PANEL (72"x66")-OVERHEAD (D-5)  
 ONE WAY EVP DETECTOR AND LIGHT-OVERHEAD (Ø2)  
 EXTEND INTO H.H.14:  
 3"R.S.C. 2-12/c#12  
 2-3/c#12  
 1-3/c#20  
 1-3/c#12 (LUM)



**SIGNAL SYSTEM OPERATIONS:**

- SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
- NORMAL OPERATION SHALL BE 4 PHASE, WITH PHASE 5 BEING A PERMISSIVE/PROTECTED LEFT TURN PHASE, AND PHASE 1 BEING AN OVERLAP PHASE WITH PHASE 6 THROUGH TRAFFIC.
- VEHICLE SIGNAL PHASES 2 AND 6 SHALL OPERATE ON RECALL.
- PEDESTRIAN SIGNAL PHASE 6 SHALL OPERATE ON RECALL.



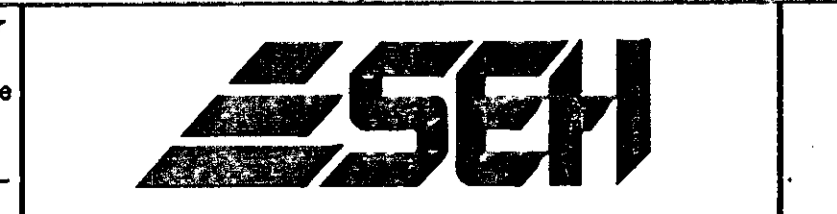
LOOP DETECTORS		
NUMBER	SIZE (FT.)	LOCATION
D1-1	2-6x6	250'
D1-2	2-6x6	5' & 20'
D1-3	2-6x6	5' & 20'
D2-1	6x6	250'
D2-2	6x6	250'
D5-1	6x20	10'
D5-2	6x20	20'
D6-1	6x6	250'
D6-2	6x6	250'
D8-1	2-6x6	250'
D8-2	2-6x6	5' & 20'
D8-3	2-6x6	5' & 20'

NOTE: LOCATION=DISTANCE FROM CROSSWALK OR STOP BAR TO FRONT OF LOOP DETECTOR.  
 \* INPLACE SAW-CUT LOOP DETECTOR, REUSE INPLACE.

NO.	BY	DATE	REVISIONS
1	JMG	7/97	PER MN/DOT COMMENTS

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: 3/6/98 Reg. No. 22457

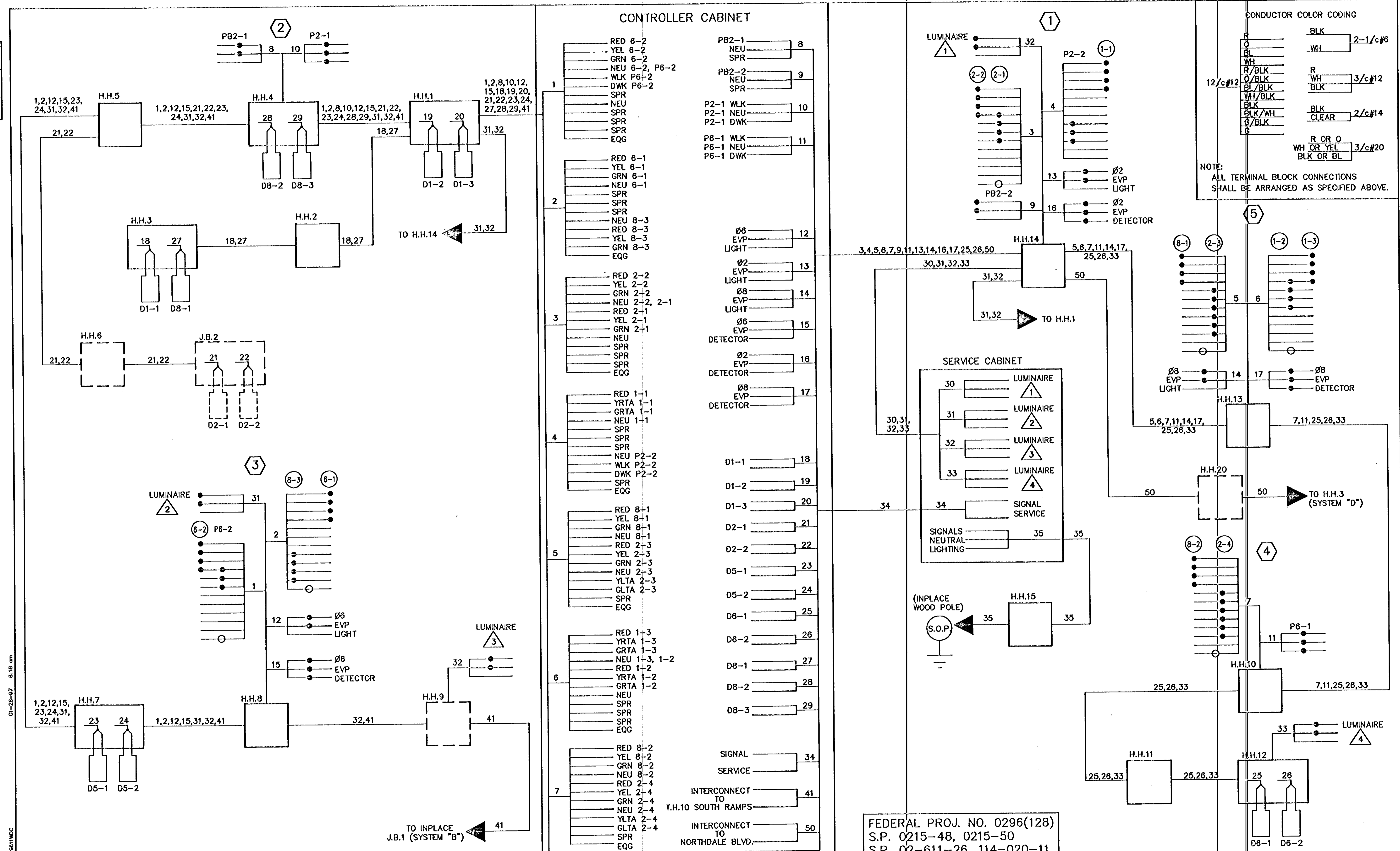


FEDERAL PROJ. NO. 0296(128)  
 S.P. 0215-48, 0215-50  
 S.P. 02-611-26, 114-020-11

MINNESOTA DEPT OF TRANSPORTATION  
 CITY OF COON RAPIDS

TRAFFIC SIGNAL SYSTEM "C"  
 INTERSECTION LAYOUT  
 HANSON BLVD.(CSAH 78) AT T.H.10 NORTH RAMPS  
 FILE NO. MNDOT9611 18  
 DATE 3/6/98 42

BASE OVERLAY/DWG. NO.



**CONDUCTOR COLOR CODING**

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

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

FEDERAL PROJ. NO. 0296(128)  
 S.P. 0215-48, 0215-50  
 S.P. 02-611-26, 114-020-11

MINNESOTA DEPT OF TRANSPORTATION  
 CITY OF COON RAPIDS

TRAFFIC SIGNAL SYSTEM "C"  
 FIELD WIRING DIAGRAM  
 HANSON BLVD.(CSAH 78) AT T.H.10 NORTH RAMPS

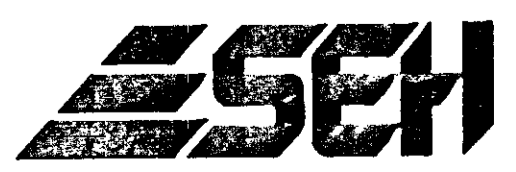
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 DATE 3/6/98  
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 42

01-28-97 8.18 am

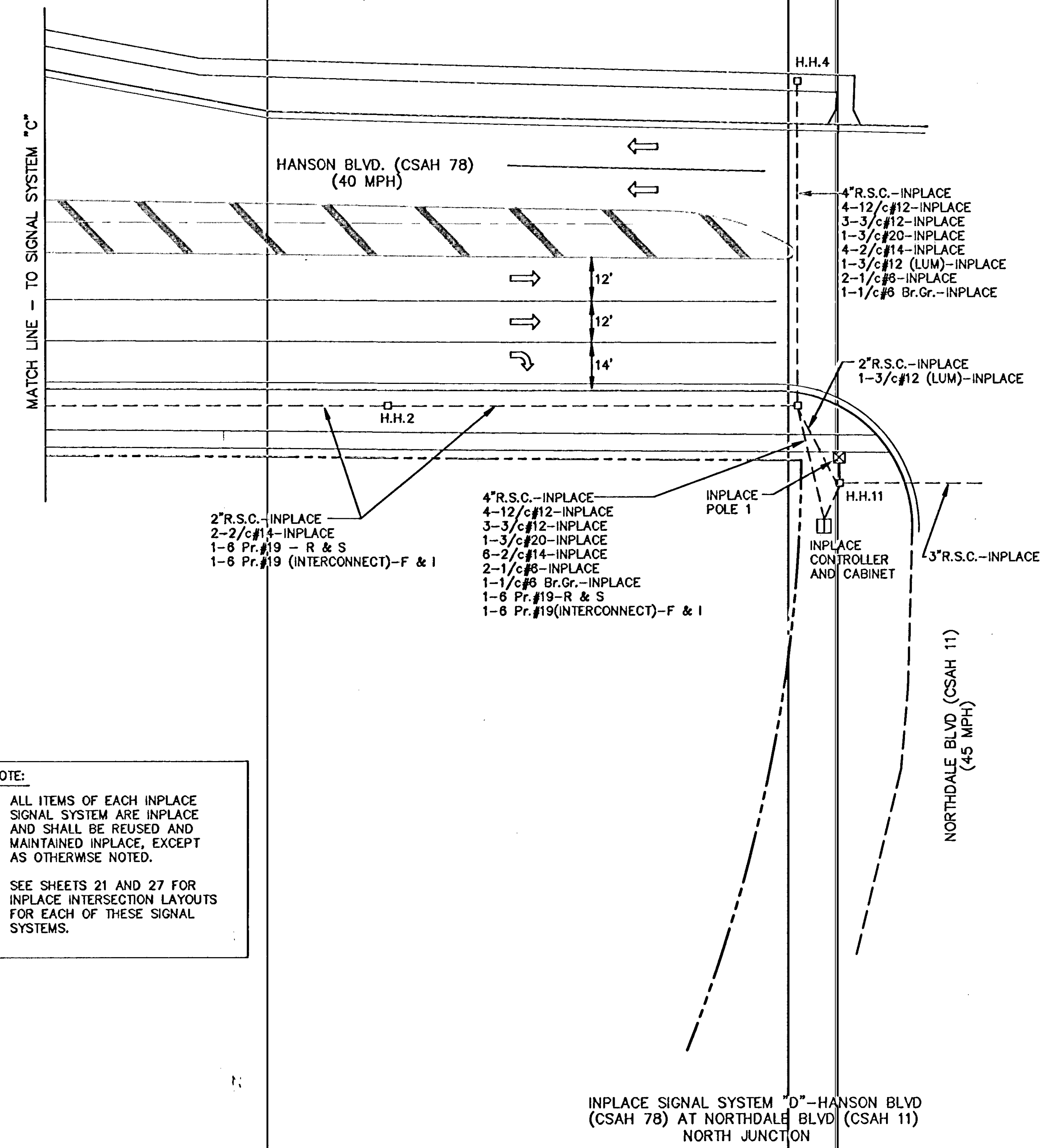
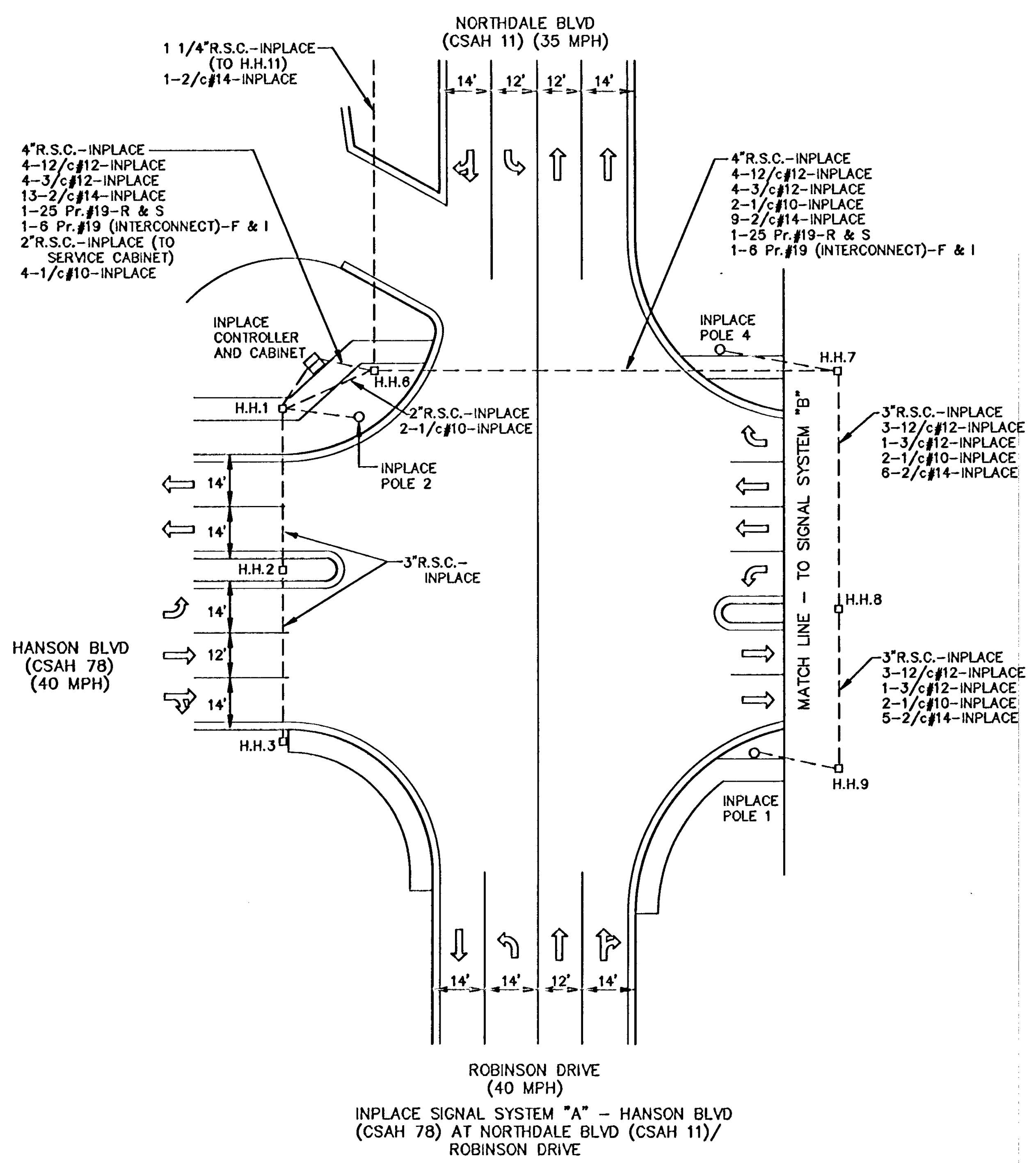
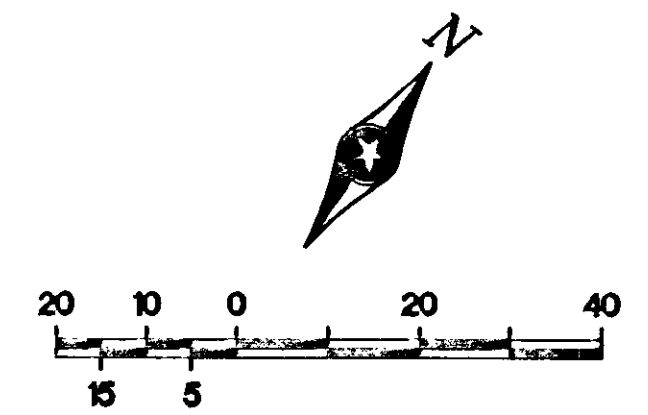
S. TRANS. DATA THROUGH WDC

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.

*John M. [Signature]*  
 Date: 3/6/98 Reg. No. 22457



NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED



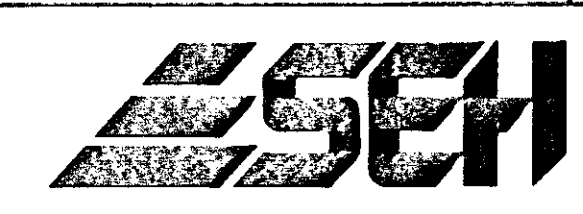
**NOTE:**  
 ALL ITEMS OF EACH INPLACE SIGNAL SYSTEM ARE INPLACE AND SHALL BE REUSED AND MAINTAINED INPLACE, EXCEPT AS OTHERWISE NOTED.  
 SEE SHEETS 21 AND 27 FOR INPLACE INTERSECTION LAYOUTS FOR EACH OF THESE SIGNAL SYSTEMS.

FEDERAL PROJ. NO. 0296(128)  
 S.P. 0215-48, 0215-50  
 S.P. 02-611-26, 114-020-11

01-10-97 4:11 PM

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 Date: 3/6/98 Reg. No. 22457



MINNESOTA DEPT OF TRANSPORTATION  
 CITY OF COON RAPIDS

INPLACE SIGNAL SYSTEMS A & D  
 (FOR INTERCONNECT PURPOSES)

FILE NO. MNDOT9611	20
DATE 3/6/98	42

BASE OVERLAY PAGE NO.

LOOP DETECTORS			
NUMBER	SIZE	FUNCTION	LOCATION
D1-1	4 - 6'x6'	1	INPLACE
D2A-1	6'x6'	1	225'
D2A-2	6'x6'	1	225'
D2A-3	6'x6'	1	225'
* D3-1	6'x12'	7	50'
* D4-1	2 - 6'x6'	3	INPLACE 150'
* D4-2	2 - 6'x6'	7	AS SHOWN
* D4-3	6'x6'	1	10'
* D4-4	6'x6'	1	10'
D5-1	4 - 6'x6'	1	INPLACE
D6-1	6'x6'	1	275'
D6-2	6'x6'	1	275'
* D7-1	6'x12'	7	50'
* D8-1	6'x6'	3	INPLACE 150'
* D8-2	2 - 6'x6'	7	AS SHOWN
* D8-3	6'x6'	1	10'

② TYPE A30 - D40-9  
ONE WAY SIGNAL (OVERHEAD)  
TWO WAY SIGNAL (TYPE 200-  
POLE MOUNTED 270°)  
LUMINAIRE AT 355  
2- SETS PEDESTRIAN INDICATIONS  
2 PEDESTRIAN PUSHBUTTONS  
EXTEND INTO H.H. 1:  
3" R.S.C.  
2-12/C#12  
1-3/C#12  
2-1/C#10

③ TYPE A30  
ONE WAY SIGNAL (OVERHEAD)  
ONE WAY SIGNAL (TYPE 10C-  
POLE MOUNTED 270°)  
2- SETS PEDESTRIAN INDICATIONS  
2 PEDESTRIAN PUSHBUTTONS  
EXTEND INTO H.H. 3:  
3" R.S.C.  
1-12/C#12  
2-3/C#12  
1-3/C#12 \*

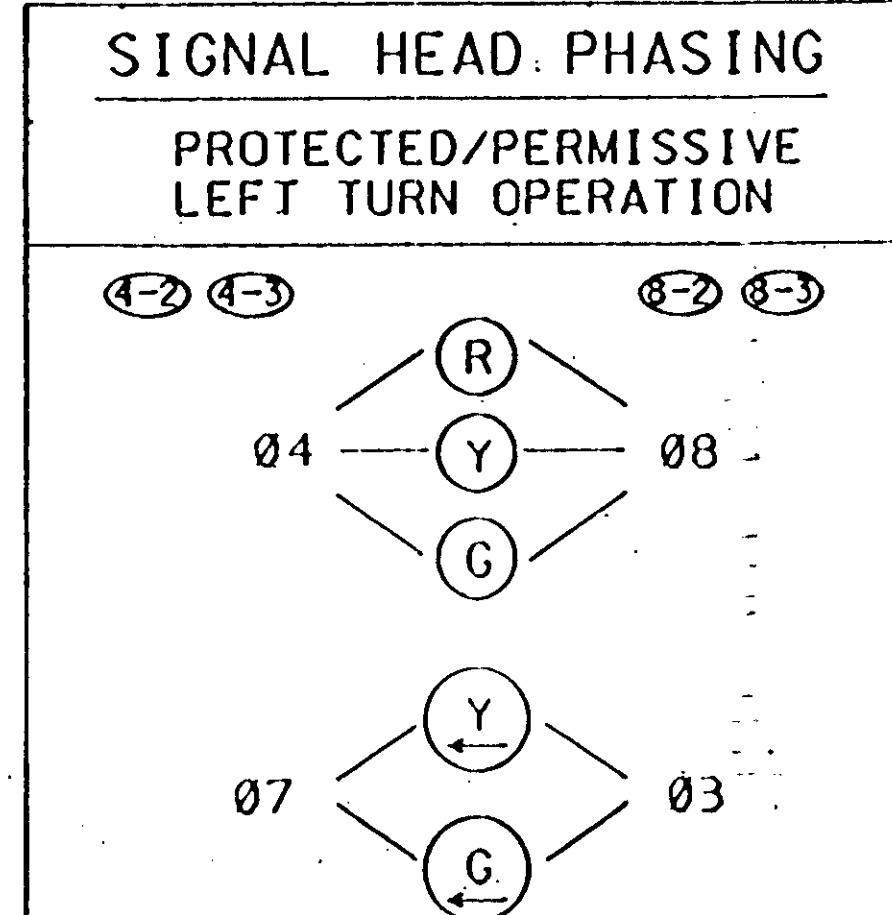
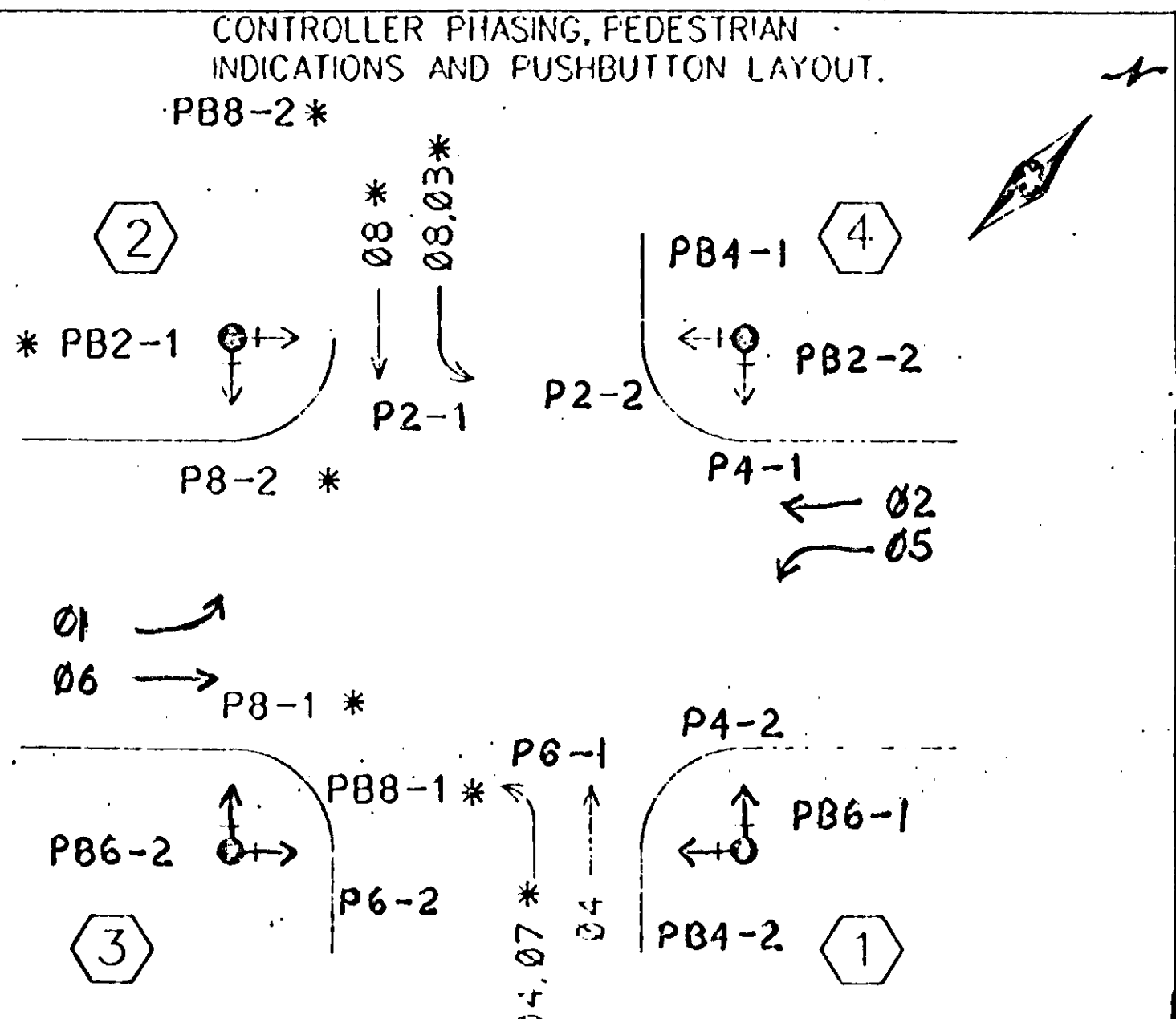
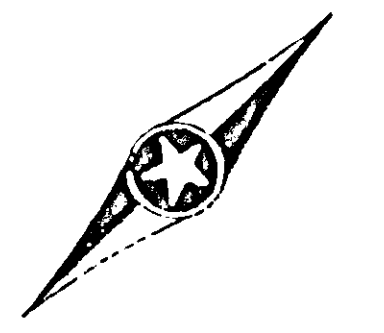
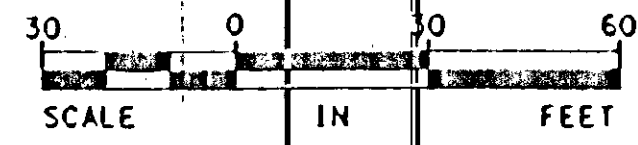
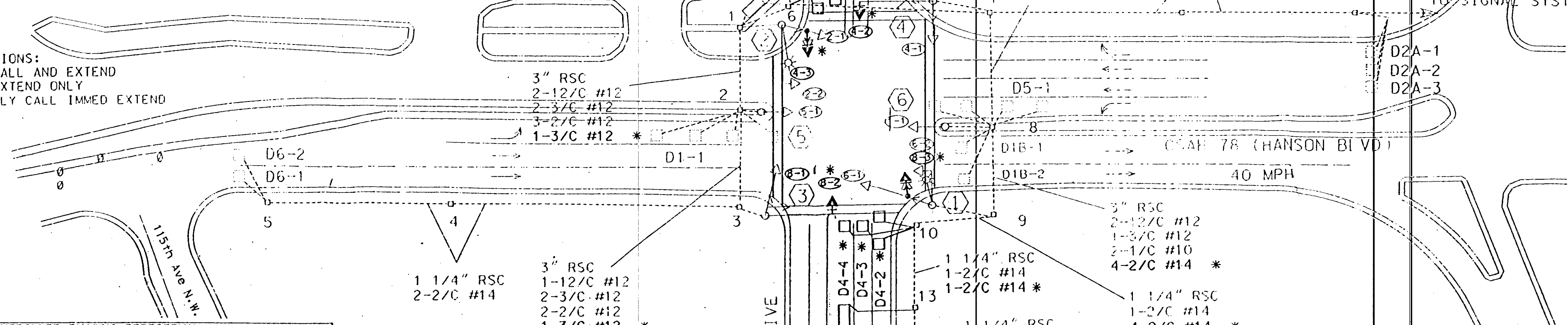
④ TYPE A35  
ONE WAY SIGNAL (OVERHEAD)  
ONE WAY SIGNAL (TYPE 10C-  
POLE MOUNTED 270°)  
2- SETS PEDESTRIAN INDICATIONS  
2 PEDESTRIAN PUSHBUTTONS  
EXTEND INTO H.H. 7:  
3" R.S.C.  
1-12/C#12  
2-3/C#12  
1-3/C#12 \*

⑤ ONE WAY SIGNAL (TYPE 1A)  
SIGN DOWNLIGHT  
EXTEND TO H.H. 2:  
3" R.S.C.  
1-12/C#12

⑥ ONE WAY SIGNAL (TYPE 1A)  
SIGN DOWNLIGHT  
EXTEND TO H.H. 8:  
3" R.S.C.  
1-12/C#12

LOCATION-DISTANCE FROM STOP  
LINE TO DETECTOR

FUNCTIONS:  
1 - CALL AND EXTEND  
3 - EXTEND ONLY  
7 - DLY CALL IMMED EXTEND



**SIGNAL SYSTEM OPERATION**

- SIGNAL SYSTEM FLASH MODE IS RED
- PHASES 2 & 6 OPERATE ON RECALL
- PHASES 1 & 5 ARE PROTECTED ONLY LEFT TURNS
- PHASES 3 & 7 ARE PROTECTED/PERMISSIVE LEFT TURNS

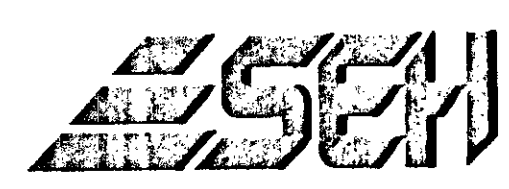
SIGNAL INDICATION CHART						
L	TYPE & SIZE (IN INCHES)					
	R	Y	G	R	Y	G
1-1	-	-	-	12	12	12
2-1	12	12	12	-	-	-
2-2	12	12	12	-	-	-
4-1	12	12	12	-	-	-
* 4-2	12	12	12	-	12	12
* 4-3	12	12	12	-	12	12
* 8-1	12	12	12	-	-	-
* 8-2	12	12	12	-	12	12
* 8-3	12	12	12	-	12	12
5-1	-	-	-	12	12	12
6-1	12	12	12	-	-	-
6-2	12	12	12	-	-	-

FEDERAL PROJ. NO. 0296(128)  
S.P. 0215-48, 0215-50  
S.P. 02-611-26, 114-020-11

"FOR INFORMATION ONLY"

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: 3/8/98 Reg. No. 22457

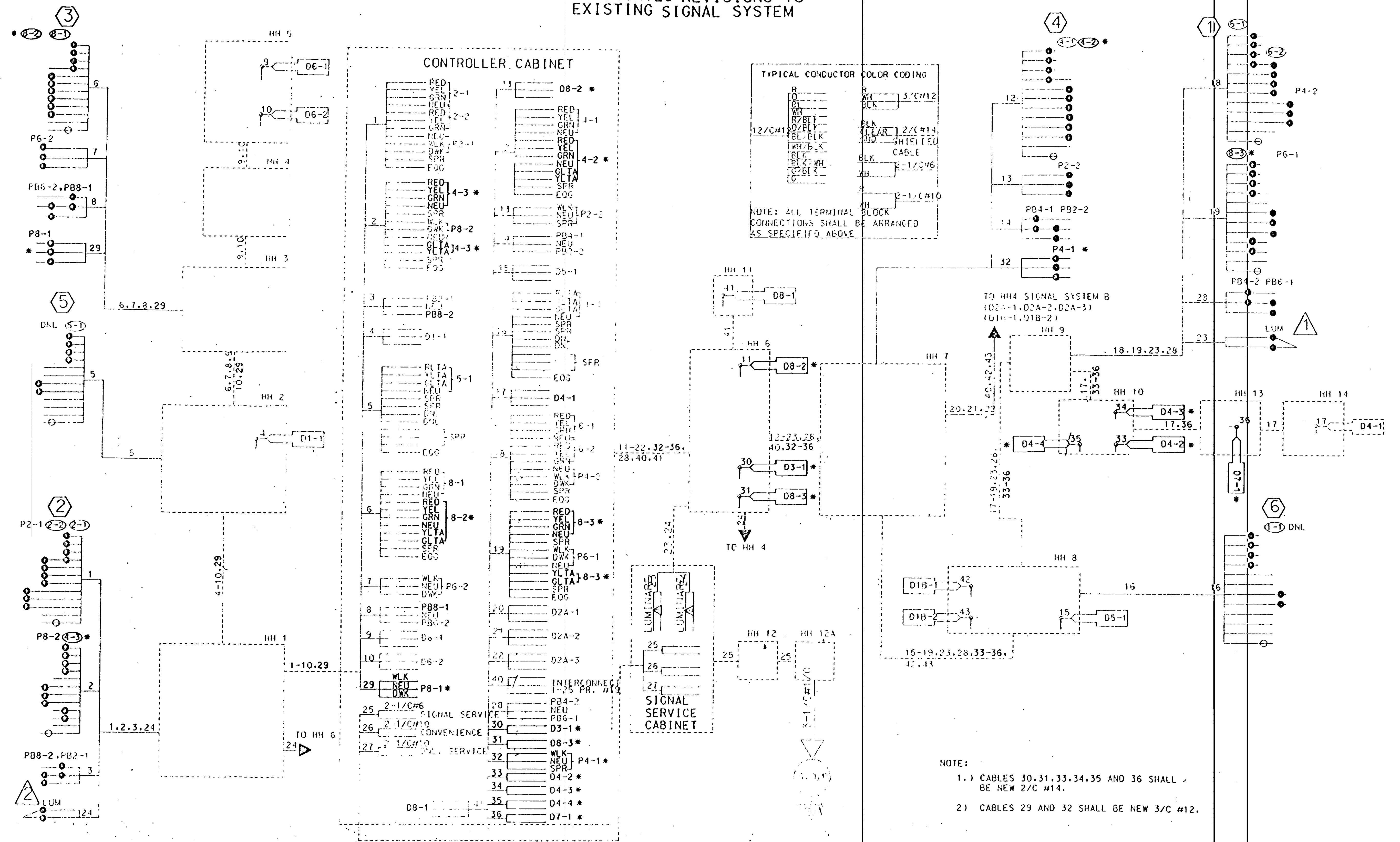


MINNESOTA DEPT OF TRANSPORTATION  
CITY OF COON RAPIDS

INPLACE SIGNAL SYSTEM "A"  
INTERSECTION LAYOUT  
HANSON BLVD (CSAH 78) AT  
NORTHDAL BLVD/ROBINSON DRIVE

FILE NO. MNDOT9611 21  
DATE 3/6/98 42

\* INDICATES REVISIONS TO EXISTING SIGNAL SYSTEM



"FOR INFORMATION ONLY"

FEDERAL PROJ. NO. 0296(128)  
S.P. 0215-48, 0215-50  
S.P. 02-611-26, 114-020-11

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Date: 3/6/98 Reg. No. 22457



MINNESOTA DEPT OF TRANSPORTATION  
CITY OF COON RAPIDS

INPLACE SIGNAL SYSTEM "A"  
FIELD WIRING DIAGRAM  
HANSON BLVD (CSAH 78) AT  
NORTHDALE BLVD/ROBINSON DRIVE

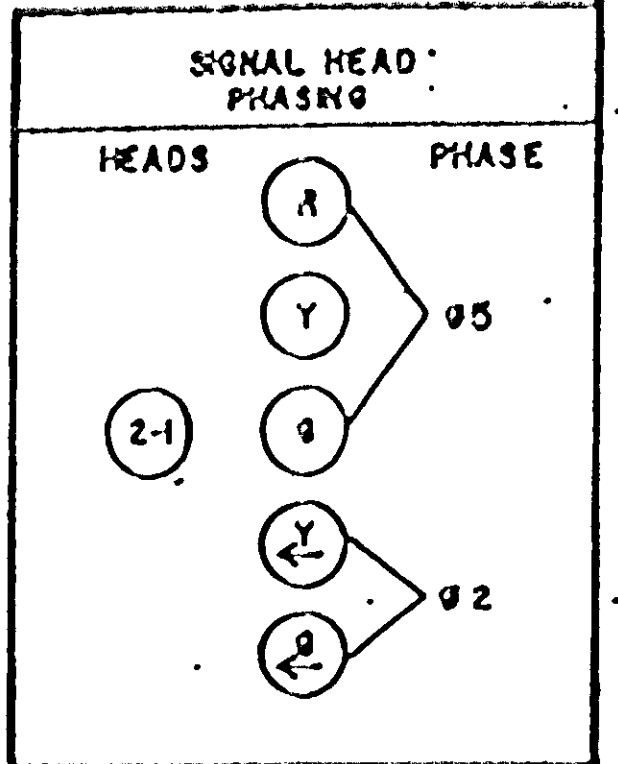
NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

FILE NO. MNDOT9611	22
DATE 3/6/98	42

BASE OVERLAY (PAGE NO.)

SIGNAL INDICATION CHART						
FACE	PHASE	FLASH	INDICATION SIZE (IN INCHES)			
			R	Y	G	←
1-1	1	R	12	12	12	
1-2	1	R	12	12	12	
2-1	2,5	R	8	8	8	12
4-1	4	R	12	12	12	
4-2	4	R	12	12	12	
5-1	5	R	12	12	12	
5-2	5	R	12	12	12	

NOTE:  
 1. THE FOLLOWING HANHOLES SHALL HAVE TYPE LD COVERS 1, 2, 3, 4, 7, 8, 9, AND 10.  
 2. REPLACE ITEMS SHOWN ON BRIDGE #9723 WILL BE INSTALLED DURING BRIDGE CONSTRUCTION.  
 3. LUMINAIRE SHALL BE 250 WATT H.B.S.V.  
 4. THE STATE WILL FURNISH TO THE CONTRACTOR AT THE JOB SITE (FOR THE CONTRACTOR TO INSTALL) THREE (3) TRAFFIC SIGNAL PEDESTAL SHAFTS AND PEDESTAL BASES (ONE EACH FOR BASE NO.'S 3, 4, 5) AND ONE (1) MASTER CABINET AND MASTER CONTROL EQUIPMENT.



DETECTOR CHART				DISTANCE FROM STOP BAR
DESIGNATION	PHASE	SIZE IN FT.	FUNCTION	
D3-1	1	6 X 6	1	260'
D3-2	1	6 X 6	1	260'
D2-1	2	MULT.	3	—
D4-1	4	MULT.	3	—
D4-2	4	MULT.	1	—
D4-3	4	2-6X6	2	155'
D5-1	5	6X6	1	275'
D5-2	5	6X6	1	275'

(1) CALL AND EXTEND  
 (2) EXTEND ONLY  
 (3) DELAY CALL, EXTEND NORMALLY

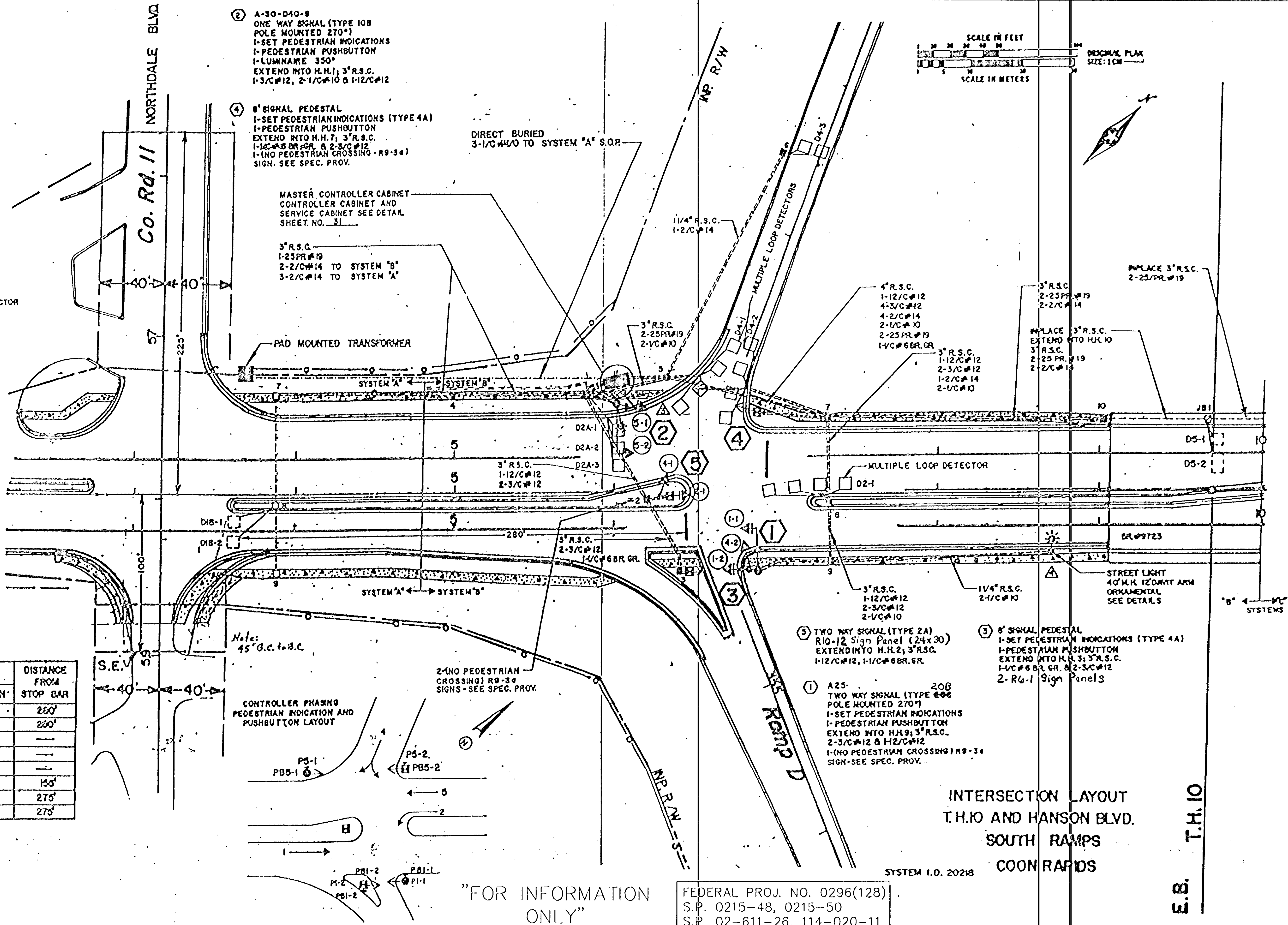
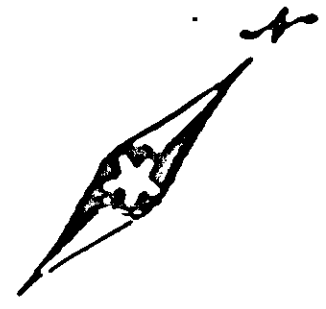
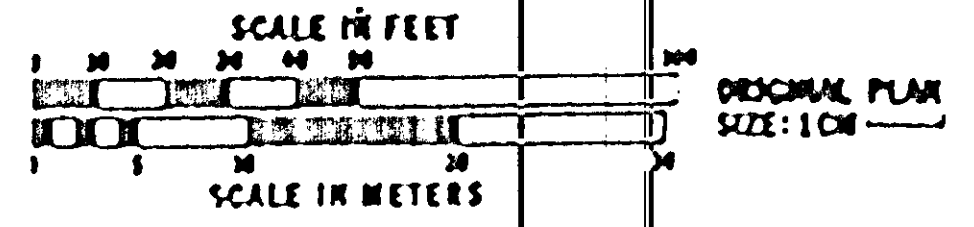
② A-30-D40-9  
 ONE WAY SIGNAL (TYPE 10B)  
 POLE MOUNTED 270°  
 1-SET PEDESTRIAN INDICATIONS  
 1-PEDESTRIAN PUSHBUTTON  
 1-LUMINAIRE 350°  
 EXTEND INTO H.H.1; 3" R.S.C.  
 1-3/C#12, 2-1/C#10 & 1-1/2/C#12

④ 8" SIGNAL PEDESTAL  
 1-SET PEDESTRIAN INDICATIONS (TYPE 4A)  
 1-PEDESTRIAN PUSHBUTTON  
 EXTEND INTO H.H.7; 3" R.S.C.  
 1-1/C#6 BR. GR. & 2-3/C#12  
 1-(NO PEDESTRIAN CROSSING) R9-3@  
 SIGN. SEE SPEC. PROV.

MASTER CONTROLLER CABINET  
 CONTROLLER CABINET AND  
 SERVICE CABINET SEE DETAIL  
 SHEET NO. 31

3" R.S.C.  
 1-25PR#19  
 2-2/C#14 TO SYSTEM "B"  
 3-2/C#14 TO SYSTEM "A"

DIRECT BURIED  
 3-1/C#10 TO SYSTEM "A" S.O.P.



Note: 45° G.C. to R.C.

CONTROLLER PHASING  
 PEDESTRIAN INDICATION AND  
 PUSHBUTTON LAYOUT

2-(NO PEDESTRIAN  
 CROSSING) R9-3@  
 SIGNS-SEE SPEC. PROV.

"FOR INFORMATION ONLY"

⑤ TWO WAY SIGNAL (TYPE 2A)  
 R10-12 Sign Panel (24x30)  
 EXTEND INTO H.H.2; 3" R.S.C.  
 1-1/2/C#12, 1-1/C#6 BR. GR.

① A25- 208  
 TWO WAY SIGNAL (TYPE 20B)  
 POLE MOUNTED 270°  
 1-SET PEDESTRIAN INDICATIONS  
 1-PEDESTRIAN PUSHBUTTON  
 EXTEND INTO H.H.9; 3" R.S.C.  
 2-3/C#12 & 1-1/2/C#12  
 1-(NO PEDESTRIAN CROSSING) R9-3@  
 SIGN-SEE SPEC. PROV.

③ 8" SIGNAL PEDESTAL  
 1-SET PEDESTRIAN INDICATIONS (TYPE 4A)  
 1-PEDESTRIAN PUSHBUTTON  
 EXTEND INTO H.H.3; 3" R.S.C.  
 1-1/C#6 BR. GR. & 2-3/C#12  
 2-R6-1 Sign Panels

INTERSECTION LAYOUT  
 T.H.10 AND HANSON BLVD.  
 SOUTH RAMPS  
 COON RAPIDS

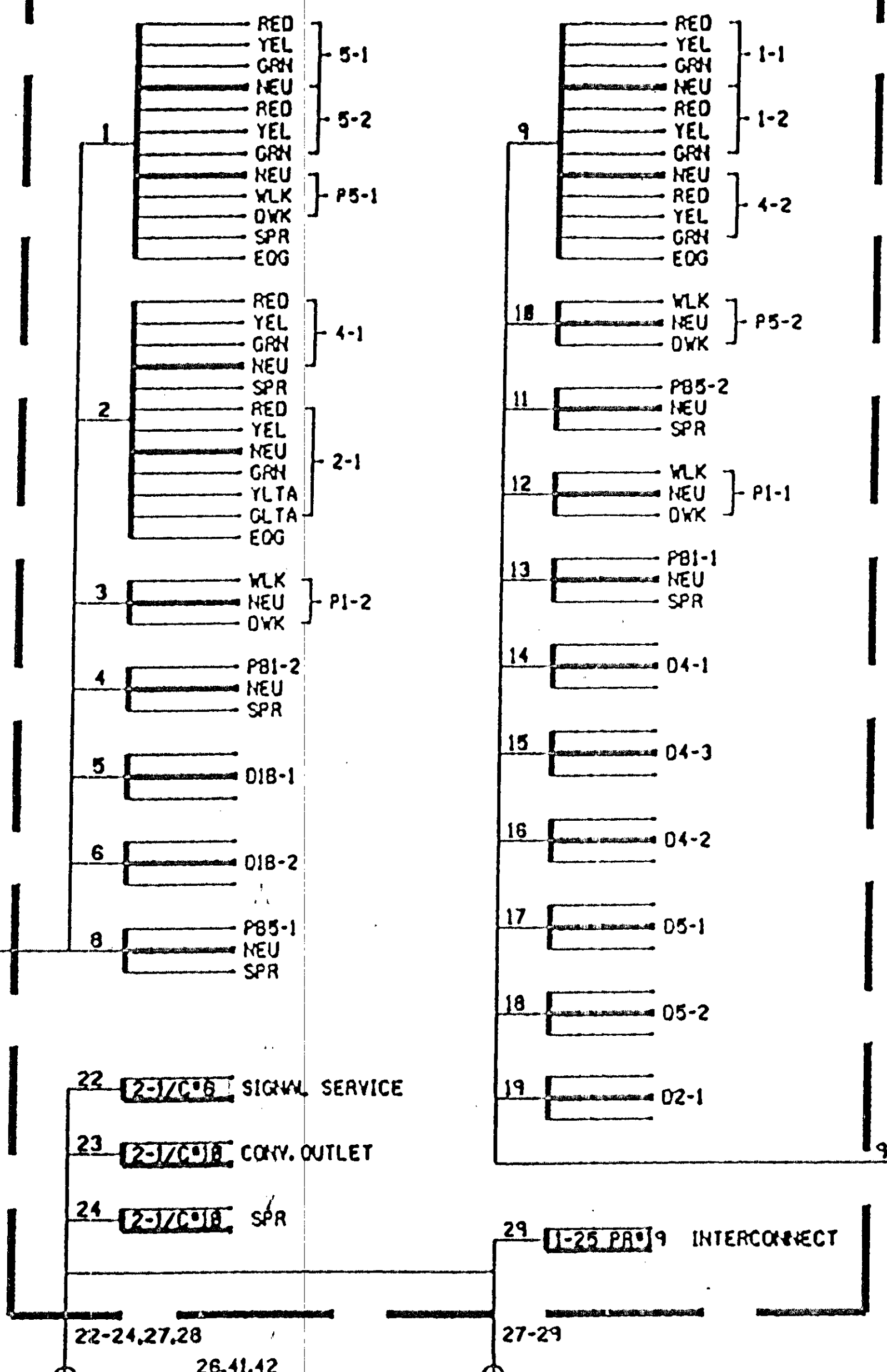
SYSTEM I.D. 20218

FEDERAL PROJ. NO. 0296(128)  
 S.P. 0215-48, 0215-50  
 S.P. 02-611-26, 114-020-11

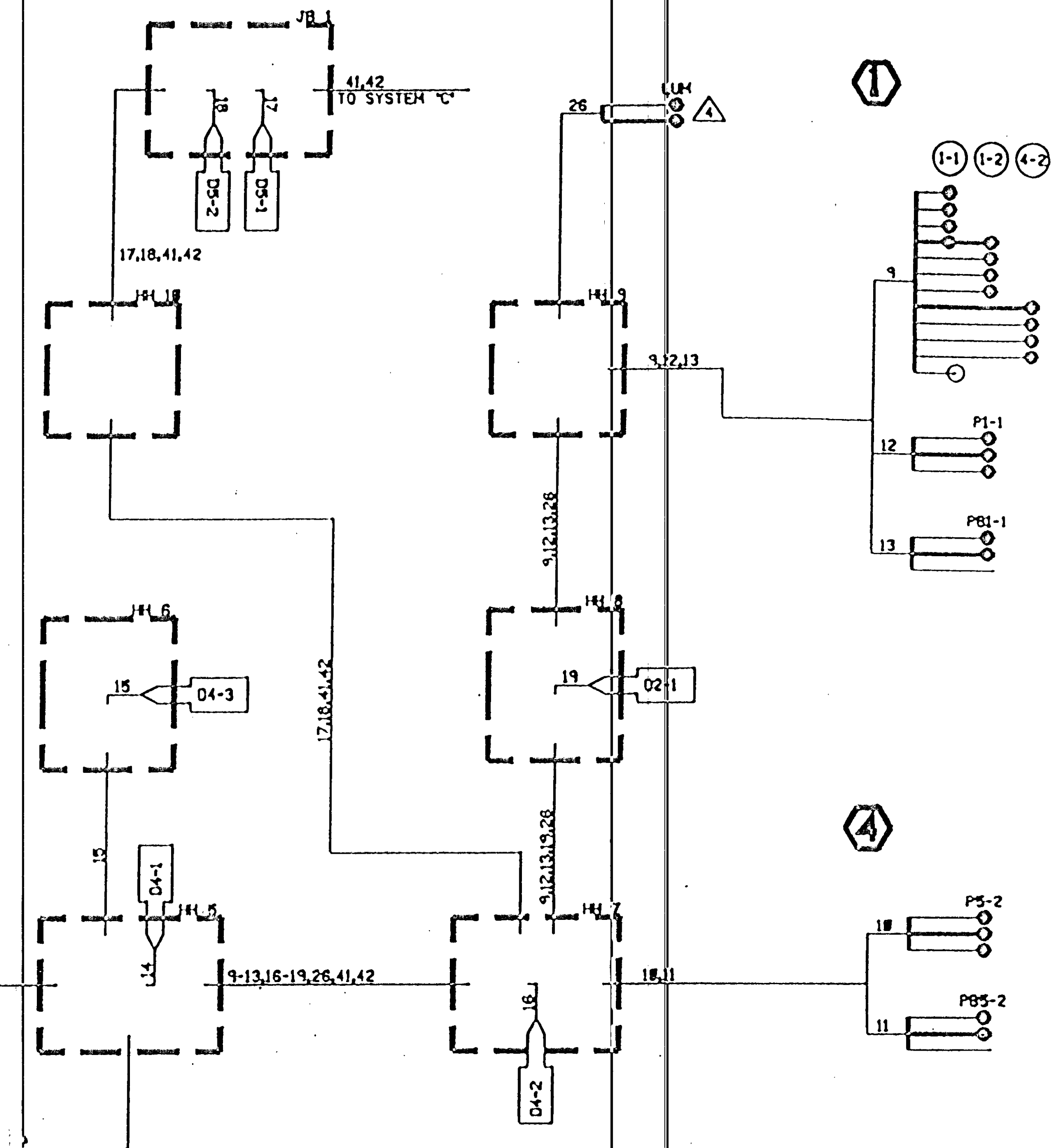
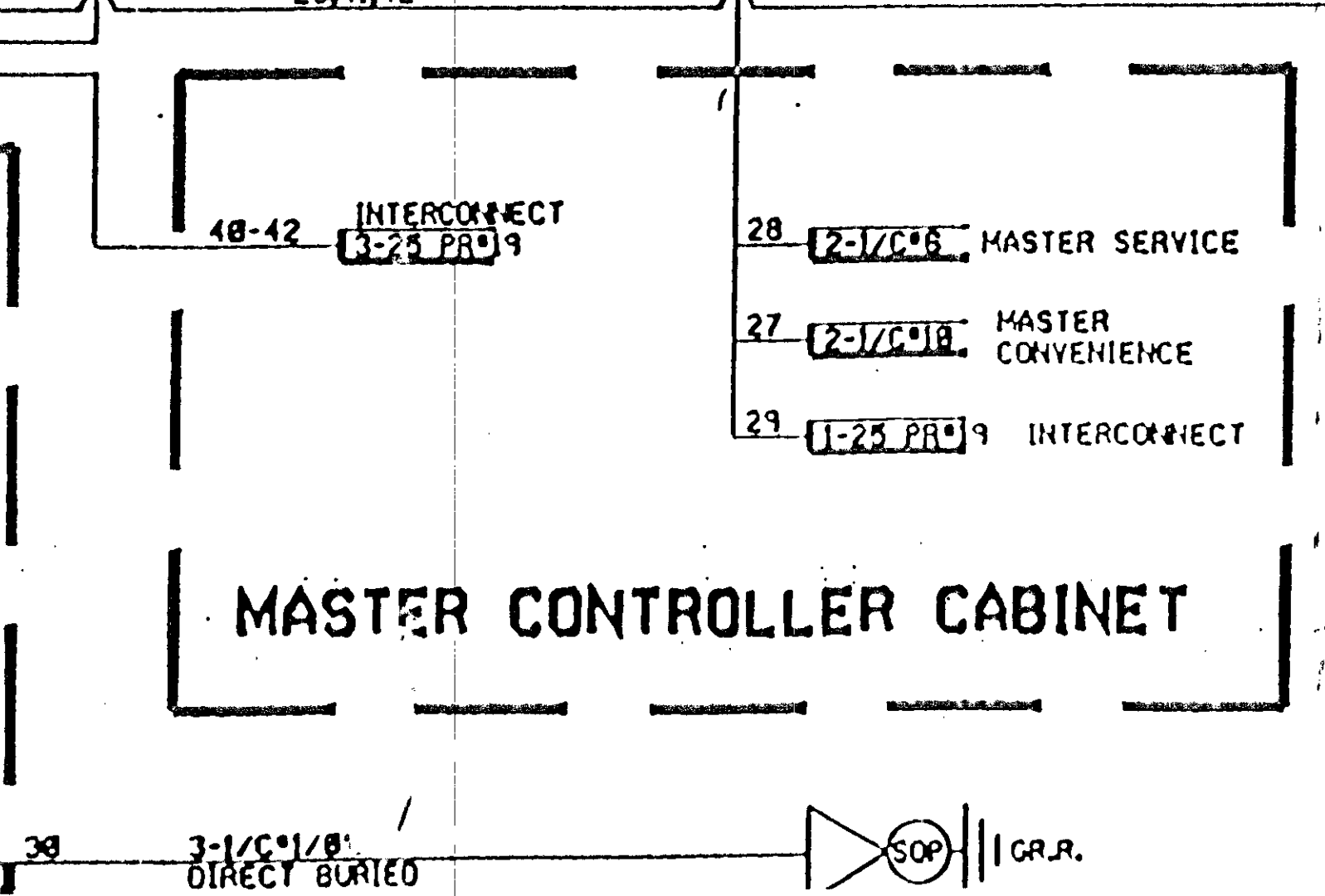
E.B. T.H.10

BASE OVERLAY DRG. NO.

### CONTROLLER CABINET



### MASTER CONTROLLER CABINET



TYPICAL CONDUCTOR COLOR CODE	
R	BLK.
0	WH
BL	GR
YH	OR
12/C*12	2/C*14 CLR
07/BLK	1/BLK
BL/BLK	2/C*6 BLK
WH/BLK	WH
BLK/WH	2-1/C*18 R
07/BLK	WH
0	

ALL TERMINAL BLOCK CONNECTIONS SHALL BE ARRANGED AS SPECIFIED ABOVE.

"FOR INFORMATION ONLY"

FIELD WIRING DIAGRAM  
T.H. 10 @ HANSON BLVD.

SOUTH RAMP  
COON RAPIDS

FEDERAL PROJ. NO. 0296(128)  
S.P. 0215-48, 0215-50  
S.P. 02-611-26, 114-020-11

NO.	BY	DATE	REVISIONS	ITEM	DESIGN	CHECKED

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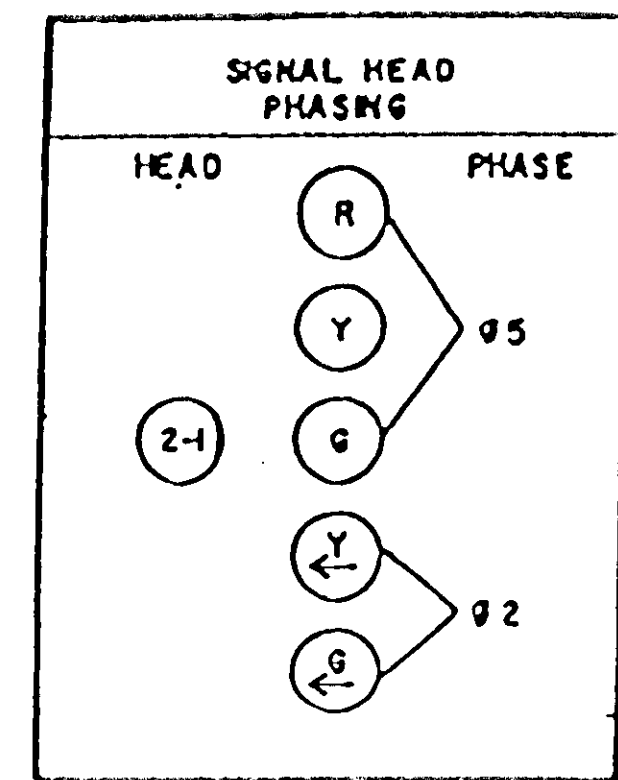
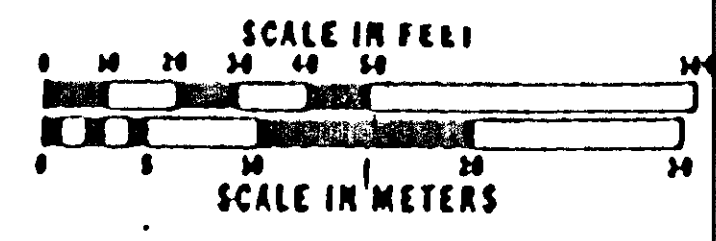


MINNESOTA DEPT OF TRANSPORTATION  
CITY OF COON RAPIDS

INPLACE SIGNAL SYSTEM "B"  
FIELD WIRING DIAGRAM  
HANSON BLVD (CSAH 78) AT  
TRUNK HIGHWAY 10 SOUTH RAMP

FILE NO. MNDOT9611 24  
DATE 3/6/98 42





FACE	PHASE	FLASH	INDICATION SIZE (IN INCHES)				
			R	Y	G	Y	G
1-1	1	R	12	12	12		
1-2	1	R	12	12	12		
2-1	2,5	R	12	12	12	12	12
4-1	4	R	12	12	12		
4-2	4	R	12	12	12	12	12
5-1	5	R	12	12	12		
5-2	5	R	12	12	12		

NOTES 1. THE FOLLOWING HANDHOLES SHALL HAVE LD COVERS  
1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 AND 15.

① A25-040-9 10C  
ONE WAY SIGNAL (TYPE 108  
POLE MOUNTED 270")  
2-SET PEDESTRIAN INDICATIONS  
2-PEDESTRIAN PUSHBUTTONS  
1-LUMINAIRE 350"  
EXTEND INTO H.H. 8 3" R.S.C.  
1-12/C#12, 3-3/C#12 & 1-2/C#10

② A25 20B  
TWO WAY SIGNAL (TYPE 206  
POLE MOUNTED 270")  
1-SET PEDESTRIAN INDICATIONS  
1-PEDESTRIAN PUSHBUTTON  
EXTEND INTO H.H. 6 3" R.S.C.  
1-12/C#12 & 2-3/C#12  
1-R9-36 SIGN

⑤ TWO WAY SIGNAL (TYPE 201)  
2-SETS PED. INDICATIONS  
1-PEDESTRIAN PUSHBUTTON  
DOWN LIGHT R10-12 Sign Panel  
EXTEND INTO H.H. 9 3" R.S.C.  
1-12/C#12 & 2-3/C#12 AND  
1-1/C#6 BR. GRD.

③ 8' SIGNAL PEDESTAL  
1-SET PEDESTRIAN INDICATIONS (TYPE 4A)  
1-PEDESTRIAN PUSHBUTTON  
EXTEND INTO H.H. 3 3" R.S.C.  
2-3/C#12, & 1-1/C#6 BR. GR.  
1-R9-36 SIGN

④ 8' SIGNAL PEDESTAL  
2-SET PEDESTRIAN INDICATIONS (TYPE 4B)  
2-PEDESTRIAN PUSHBUTTONS  
EXTEND INTO H.H. 10 3" R.S.C.  
3-3/C#12 & 1-1/C#6 BR. GR.

INPLACE 3" R.S.C.  
EXTEND INTO H.H. 7  
3" R.S.C.  
2-25PR#19

STREET LIGHT (ORNAMENTAL)  
40' M.H. 12' DAVIT  
EXTEND INTO H.H. 7; 1/4" R.S.C.  
2-1/C#8

3" R.S.C.  
1-12/C#12  
2-3/C#12  
2-25PR#19  
2-1/C#8

3" R.S.C.  
2-2/C#14  
2-1/C#8

3" R.S.C.  
2-2/C#14  
2-1/C#8

3" R.S.C.  
1-12/C#12  
5-3/C#12  
2-2/C#14  
2-1/C#8

4" R.S.C.  
2-12/C#12  
6-3/C#12  
2-2/C#14

STREET LIGHT (ORNAMENTAL)  
40' MOUNTING HEIGHT  
12' DAVIT ARM  
EXTEND INTO H.H. 12; 1/4" R.S.C.  
2-1/C#8

3" R.S.C.  
3-3/C#12  
1-1/C#6 BR. GR.  
2-2/C#14  
2-1/C#8

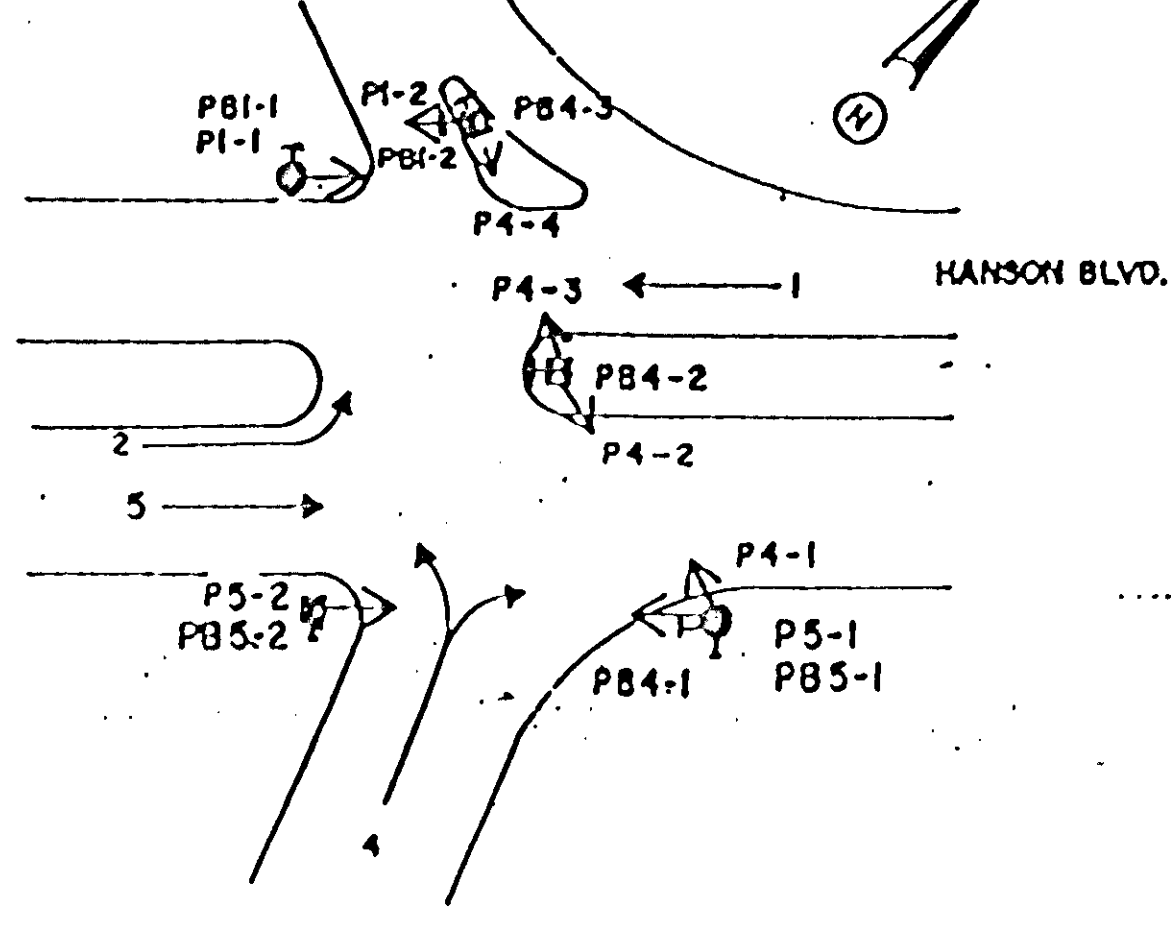
3" R.S.C.

3" R.S.C.  
1-12/C#12  
4-3/C#12  
4-2/C#14  
1-1/C#6 BR. GR.  
2-25PR#19  
2-1/C#8

S.O.P.  
DISCONNECT SWITCH  
EXTEND INTO H.H. 13; 2" R.S.C.  
3-1/C#10

INPLACE 2" R.S.C.  
EXTEND INTO H.H. 4; 2" R.S.C.  
2-2/C#14

CONTROLLER PHASING PEDESTRIAN INDICATION.  
PUSHBUTTON LAYOUT



DETECTOR CHART				DISTANCE FROM STOP BAR
DESIGNATION	PHASE	SIZE IN FT.	FUNCTION	
D1-1	1	6X6	1	290'
D1-2	1	6X6	1	290'
D2-1	2	4-6X6	1	
D4-1	4	4-6X6	1	
D4-2	4	4-6X6	3	
D4-3	4	2-6X6	2	150'
D5-1	5	6X6	1	290'
D5-2	5	6X6	1	290'

(1) CALL AND EXTEND (2) EXTEND ONLY  
(3) DELAY CALL EXTEND NORMALLY

"FOR INFORMATION ONLY"

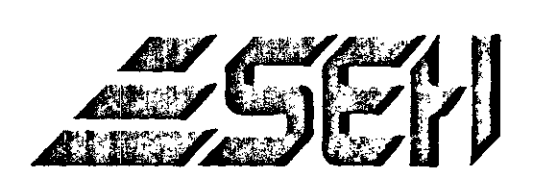
FEDERAL PROJ. NO. 0296(128)  
S.P. 0215-48, 0215-50  
S.P. 02-611-26, 114-020-11

INTERSECTION LAYOUT  
T.H.10 AND HANSON BLVD.  
NORTH RAMPS  
COON RAPIDS

SYSTEM I.D. 20217

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: 3/6/98 Reg. No. 22457



MINNESOTA DEPT OF TRANSPORTATION  
CITY OF COON RAPIDS

INPLACE SIGNAL SYSTEM "C"  
INTERSECTION LAYOUT  
HANSON BLVD (CSAH 78) AT  
TRUNK HIGHWAY 10 NORTH RAMPS

FILE NO. MNDOT9611	25
DATE	3/6/98
	42



**NOTES:**

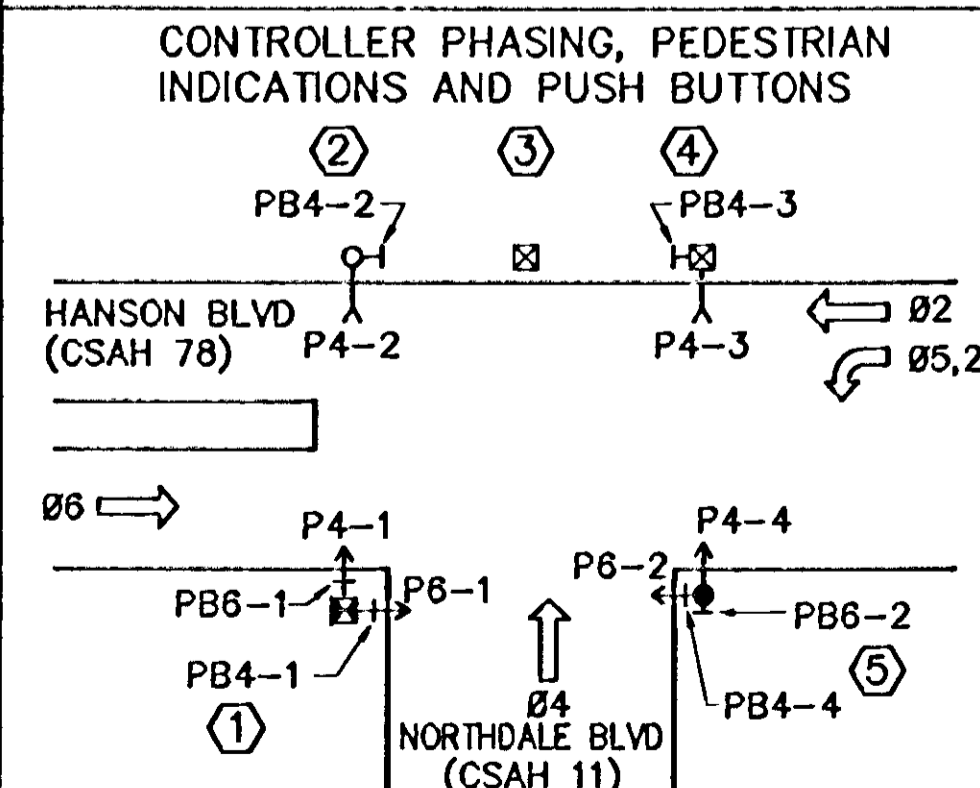
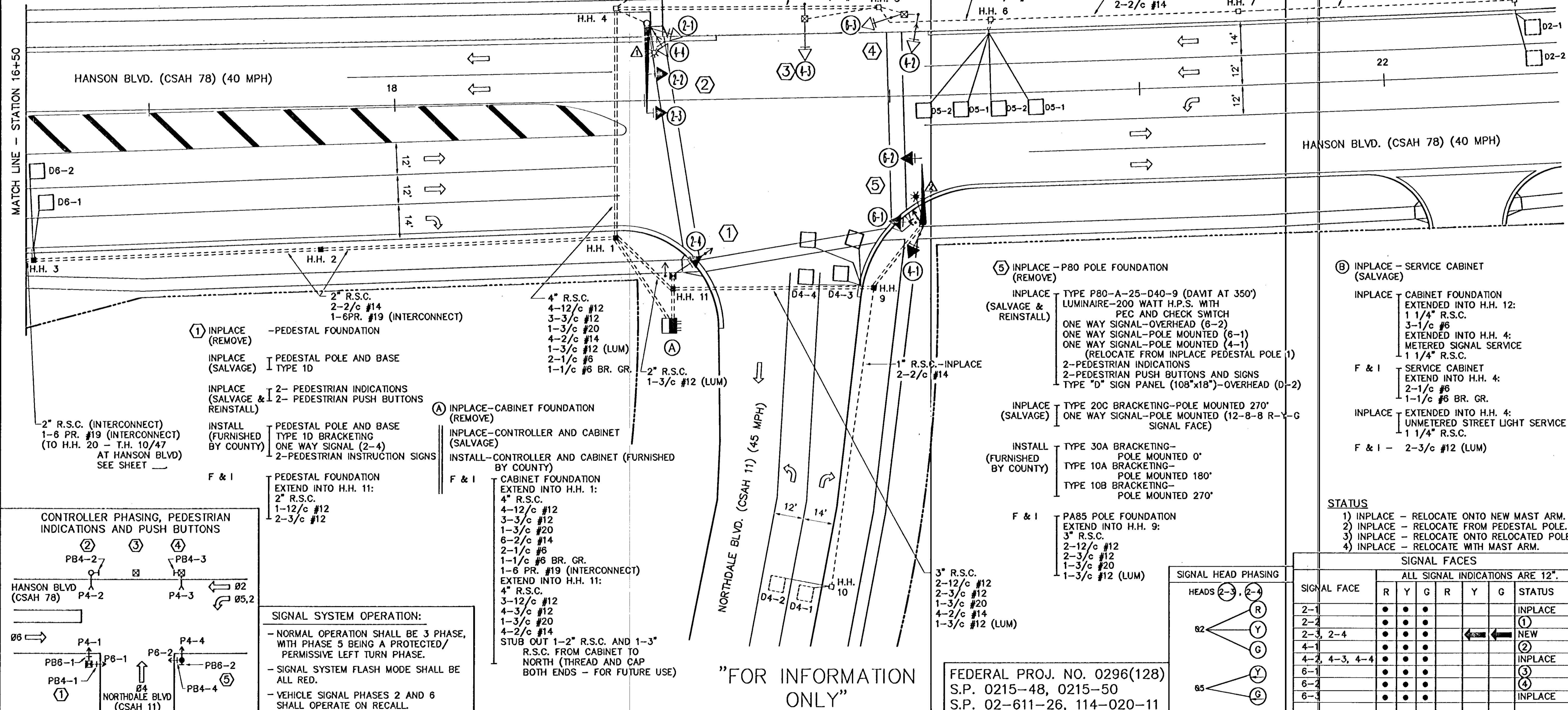
- 1) LOCATION OF POLES, CONTROLLER CABINET, LOOP DETECTORS AND HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
- 2) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
- 3) LOOP DETECTOR WIRES SHALL BE CROSS-LINKED POLYETHYLENE (XLP) IN 1" N.M.C. SEE SPECIAL PROVISIONS AND DETAILS.
- 4) NEW HANDHOLES SHALL BE CONCRETE HANDHOLES WITH TYPE "C" COVERS PER MN/DOT STANDARD PLATE No.8117F.
- 5) EACH SIGNAL FACE SHALL HAVE BACKGROUND SHIELD.
- 6) EACH PEDESTRIAN INDICATION IS 12"x12", IS INPLACE AND SHALL BE REUSED AS SHOWN.
- 7) A 3/4" HALF COUPLING, 3/4" PIPE NIPPLE AND CONDUIT OUTLET BODY SHALL BE FURNISHED AND INSTALLED APPROXIMATELY 6' FROM THE LEFT END OF EACH MAST ARM.
- 8) SEE SPECIAL PROVISIONS REGARDING REMOVAL, SALVAGING AND/OR REINSTALLING INPLACE SIGNAL EQUIPMENT (INCLUDING INTERCONNECT CABLE). \* = INPLACE DETECTOR - REUSE INPLACE.
- 9) CONTRACTOR SHALL KEEP SIGNAL SYSTEM OPERATIONAL AT ALL TIMES, EXCEPT AS OTHERWISE NOTED IN THE SPECIAL PROVISIONS.
- 10) (INTERCONNECT) DENOTES MATERIALS TO BE MEASURED AND PAID FOR SEPARATELY FROM ITEM No. 0565.604.

LOOP DETECTORS			
NUMBER	SIZE (FT.)	LOCATION	FUNCTION
* D2-1	6x6	250'	1
* D2-2	6x6	250'	1
* D4-1	6x6	130'	3,8
* D4-2	6x6	130'	3,8
D4-3	2-6x6	AS SHOWN	7
D4-4	2-6x6	AS SHOWN	1
D5-1	2-6x6	20' & 50'	1,11
D5-2	2-6x6	5' & 35'	1,11
D6-1	6x6	250'	1
D6-2	6x6	250'	1

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

**LOOP DETECTOR FUNCTIONS:**

- 1) CALL AND EXTEND
- 2) CALL ONLY
- 3) EXTEND ONLY
- 4) CALL ONLY DENSITY
- 5) DELAYED CALL ONLY
- 6) DELAYED CALL ONLY DENSITY
- 7) DELAYED CALL- IMMEDIATE EXTEND
- 8) CARRY OVER (STRETCH)
- 9) ADVISORY DETECTOR
- 10) SAMPLING DETECTOR
- 11) EXTEND Ø2 DURING Ø2 GREEN



**SIGNAL SYSTEM OPERATION:**

- NORMAL OPERATION SHALL BE 3 PHASE, WITH PHASE 5 BEING A PROTECTED/ PERMISSIVE LEFT TURN PHASE.
- SIGNAL SYSTEM FLASH MODE SHALL BE ALL RED.
- VEHICLE SIGNAL PHASES 2 AND 6 SHALL OPERATE ON RECALL.

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: 3/6/98 Reg. No. 22457



MINNESOTA DEPT OF TRANSPORTATION  
CITY OF COON RAPIDS

INPLACE SIGNAL SYSTEM "D"  
INTERSECTION LAYOUT  
HANSON BLVD (CSAH 78) AT NORTHDAL BLVD

FILE NO. MND019611  
DATE 3/6/98

27  
42

**SIGNAL HEAD PHASING**

HEADS (2-3, 2-4)

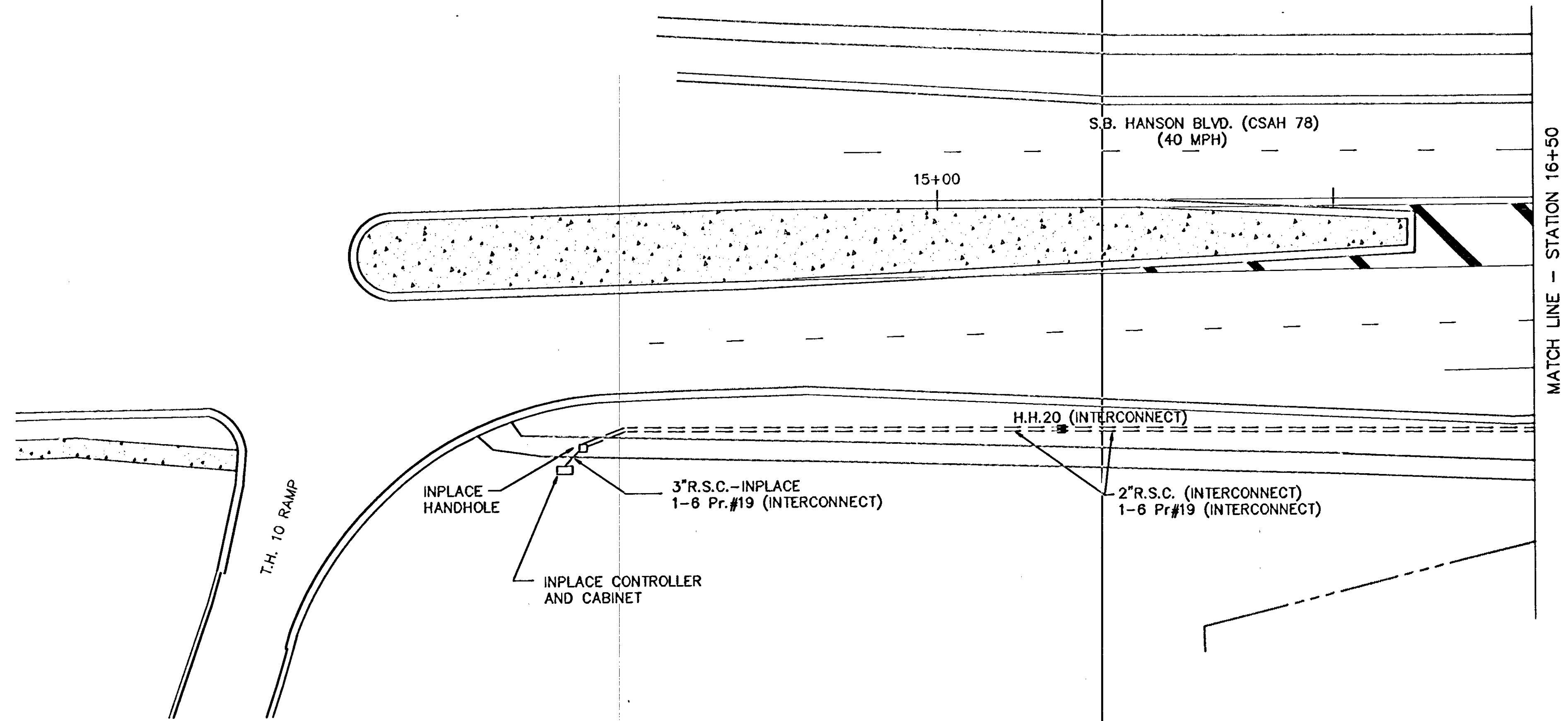
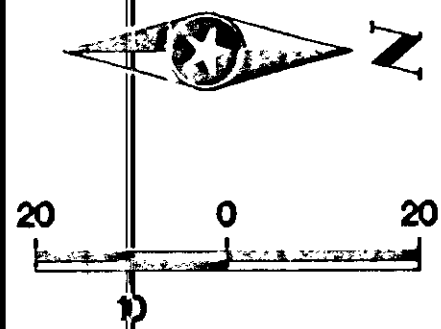
Ø2 (R, Y, G)

Ø5 (Y, G)

**STATUS**

- 1) INPLACE - RELOCATE ONTO NEW MAST ARM.
- 2) INPLACE - RELOCATE FROM PEDESTAL POLE.
- 3) INPLACE - RELOCATE ONTO RELOCATED POLE.
- 4) INPLACE - RELOCATE WITH MAST ARM.

SIGNAL FACE	ALL SIGNAL INDICATIONS ARE 12"						STATUS
	R	Y	G	R	Y	G	
2-1	•	•	•				INPLACE
2-2	•	•	•				(1)
2-3, 2-4	•	•	•	←	←		NEW
4-1	•	•	•				(2)
4-2, 4-3, 4-4	•	•	•				INPLACE
6-1	•	•	•				(3)
6-2	•	•	•				(4)
6-3	•	•	•				INPLACE

"FOR INFORMATION ONLY"

FEDERAL PROJ. NO. 0296(128)  
 S.P. 0215-48, 0215-50  
 S.P. 02-611-26, 114-020-11

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.  
*John M. Jones*  
 Date: 3/6/98 Reg. No. 22457

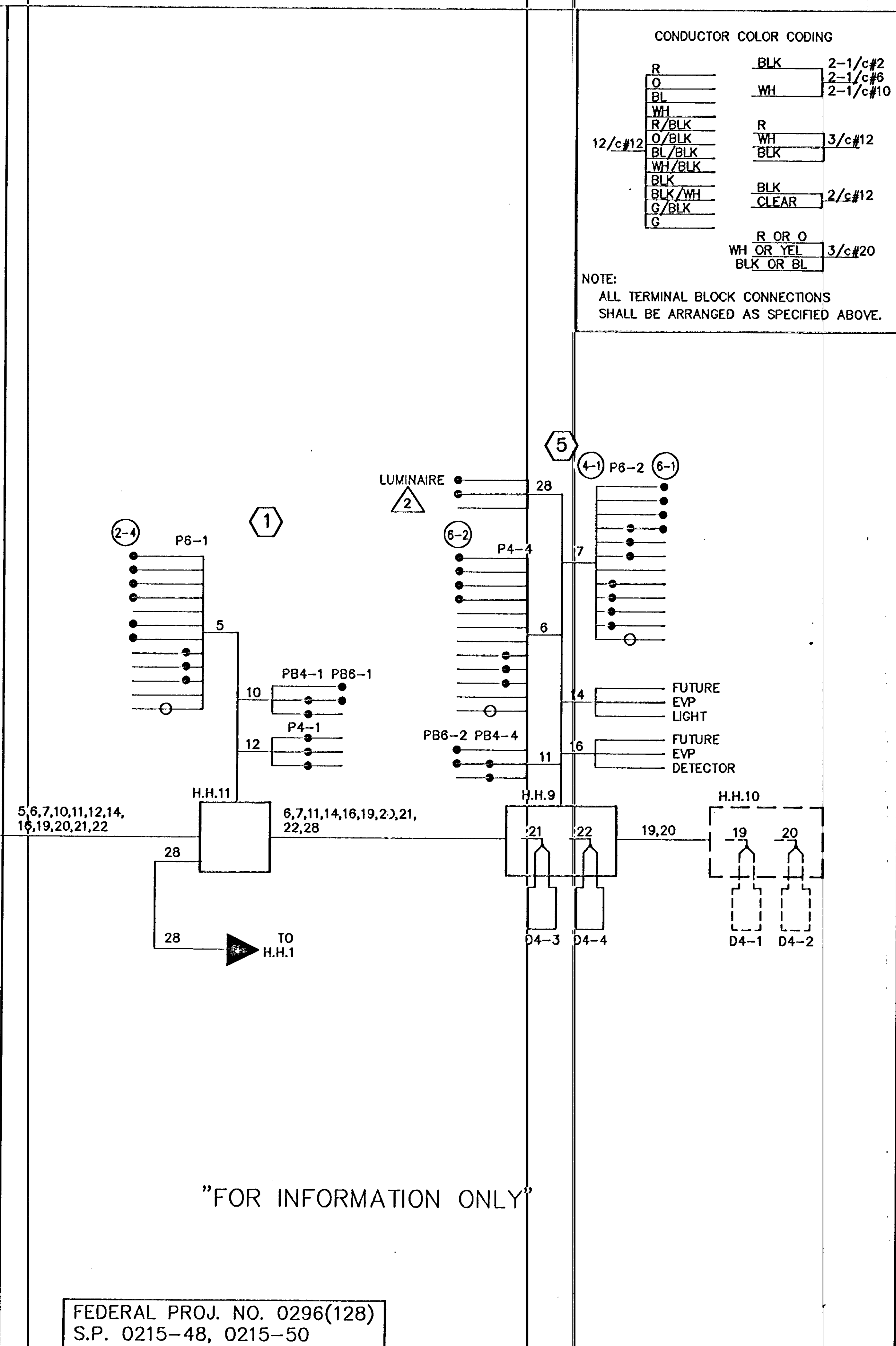
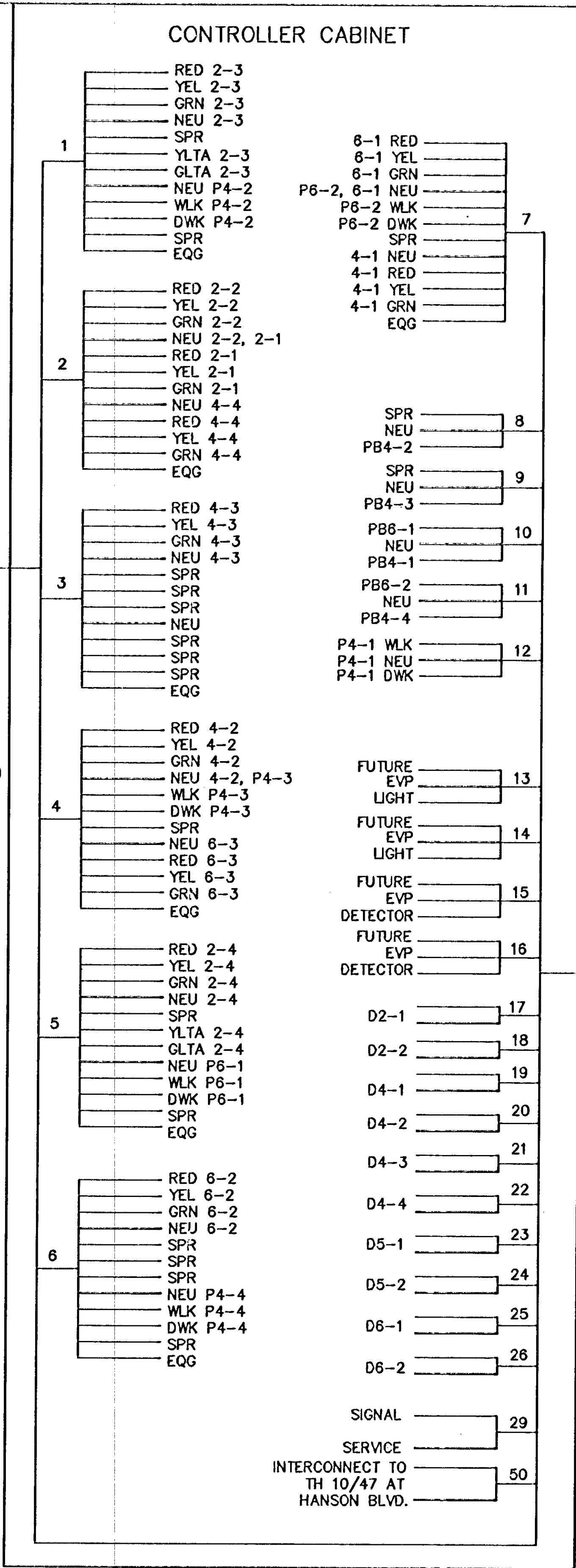
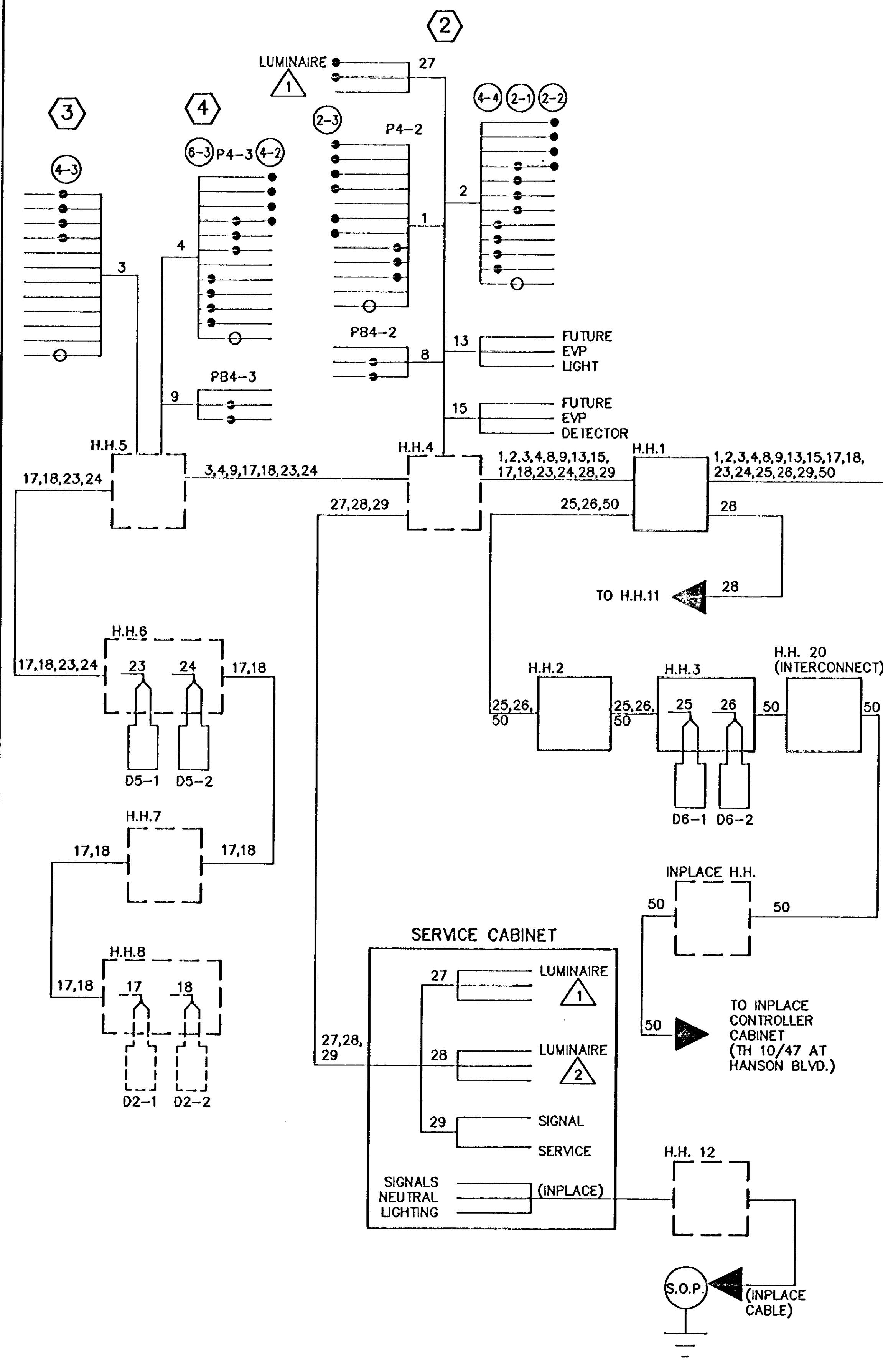


MINNESOTA DEPT OF TRANSPORTATION  
 CITY OF COON RAPIDS

INPLACE SIGNAL SYSTEM "D"  
 INTERSECTION LAYOUT  
 HANSON BLVD (CSAH 78) AT NORTHDAL BLVD

FILE NO.	28
MNDOT9611	
DATE	
3/6/98	42

BASE OVERLAY DRG. NO.



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.

*John M. [Signature]*  
Date: 3/6/98 Reg. No. 22457



MINNESOTA DEPT OF TRANSPORTATION  
CITY OF COON RAPIDS

INPLACE SIGNAL SYSTEM "D"  
FIELD WIRING DIAGRAM  
HANSON BLVD. (CSAH 7J) AT NORTHDAL BLVD.

FILE NO. MNDOT9611  
DATE 3/6/98  
29  
42





M.U.T.C.D. CODE	SIZE	PANEL AREA SQ. FT.	# OF GROUND POST MOUNTED INSTALLATIONS	# OF MEDIAN POST MOUNTED INSTALLATIONS	INSERT	POST PER INSTALLATION	MOUNTING HEIGHT	M.U.T.C.D. CODE	SIZE	PANEL AREA SQ. FT.	# OF GROUND POST MOUNTED INSTALLATIONS	# OF MEDIAN POST MOUNTED INSTALLATIONS	INSERT	POST PER INSTALLATION	MOUNTING HEIGHT	M.U.T.C.D. CODE	SIZE	PANEL AREA SQ. FT.	# OF GROUND POST MOUNTED INSTALLATIONS	# OF MEDIAN POST MOUNTED INSTALLATIONS	INSERT	POST PER INSTALLATION	MOUNTING HEIGHT
R6-1R	36" x 12"	3.00	2	0				R6-1R	48" x 18"	6.00	0	4		2	7.0'	M3-2A	24" x 12"	2.19	2	0			
R1-1	30" x 30"	6.25	2	0		1	7.0'									M3-4A	24" x 12"	2.19	2	0		1	7.0'
R3-8	30" x 30"	6.25	1	0		2	7.0'	W1-1L	36" x 36"	9.00	1	0		2	7.0'	M1-6	24" x 24"	4.00	9	0			
								W13-1	18" x 18"	2.25	1	0				M5-1AR	21" x 15"	2.19	2	0			
R3-8 (RIGHT)	36" x 30"	7.50	1	0		2	7.0'	W1-7	48" x 24"	8.00	1	0		2	7.0'	M6-1AR	21" x 15"	2.19	2	0			
								X4-2	18" x 18"	2.25	2	0				M6-1AL	21" x 15"	2.19	1	0			
R3-X1	30" x 30"	6.25	4	0		1	7.0'								M3-1A	24" x 12"	2.19	1	0				
								W4-2R	36" x 36"	9.00	1	0		2	7.0'	M3-3A	24" x 12"	2.19	2	0		1	7.0'
R3-X2	30" x 30"	6.25	0	4		1	7.0'																
								W3-3	36" x 36"	9.00	2	0		2	7.0'								
R4-7	24" x 30"	5.00	0	4		1	7.0'	W9-1	36" x 36"	9.00	1	0		2	7.0'								
X4-2	18" x 18"	2.25	0	4																			
R3-4	24" x 24"	4.00	0	2				X4-2	18" x 18"	2.25	0	2		1	4.0'								
R4-7	24" x 30"	5.00	0	2		1	7.0'	X4-4R	12" x 36"	3.00	2	0		1	4.0'								
X4-2	18" x 18"	2.25	0	2				X4-5	6" x 12"	0.50	0	2		1	4.0'								
R9-3a	18" x 18"	2.25	0	1																			
R4-7	24" x 30"	5.00	0	1		1	7.0'																
X4-2	18" x 18"	2.25	0	1																			
R5-1	30" x 30"	6.25	2	6		2	7.0'																
R5-1a	30" x 18"	3.75	1	0		2	7.0'																

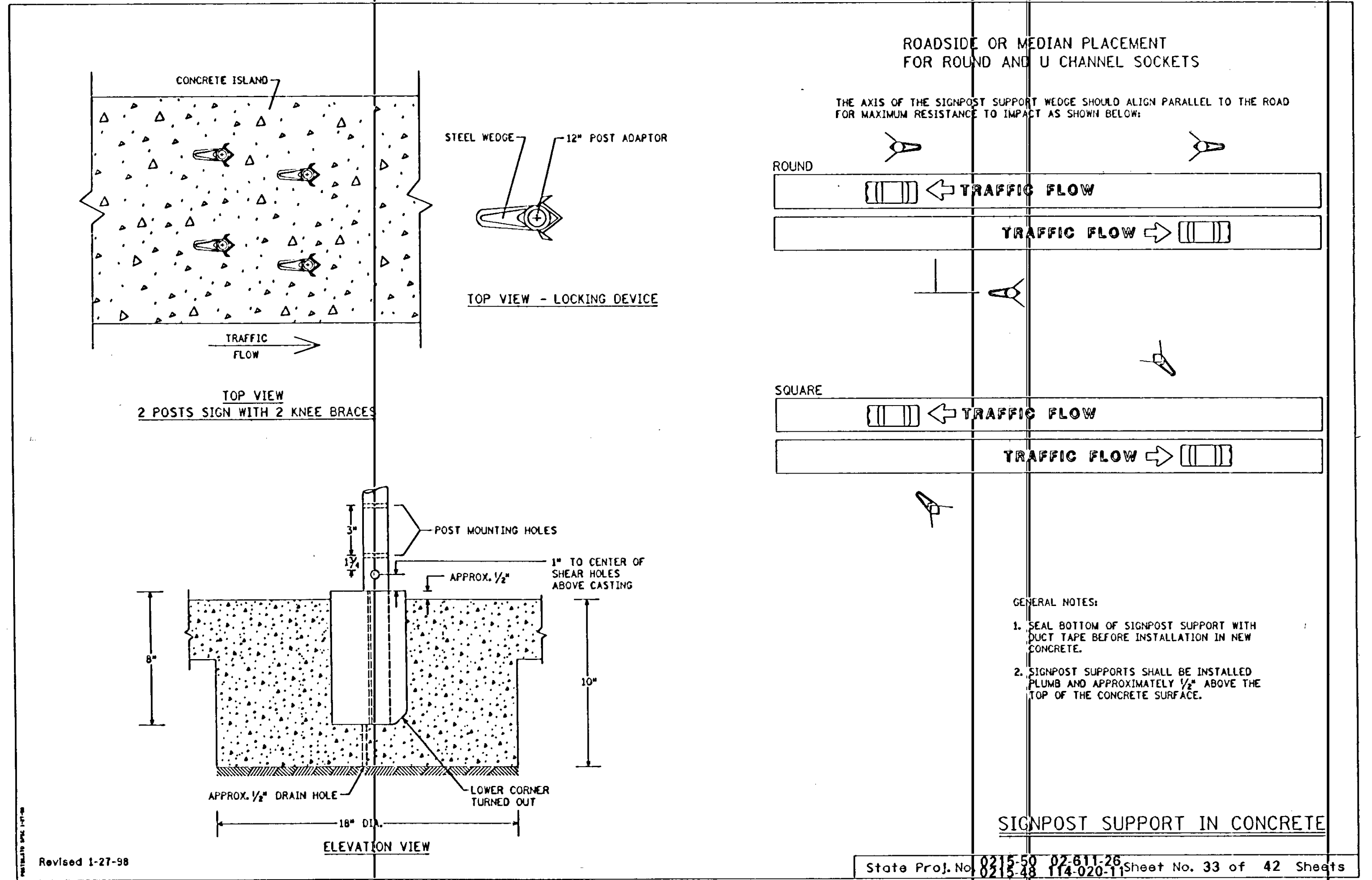
PERMANENT SIGNING QUANTITIES

REVISIONS  
DATE BY

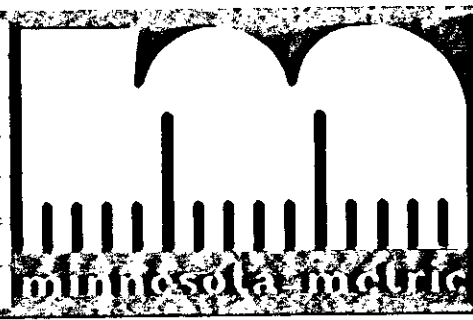
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S.P. 0215-48 0215-50 S.P. 02-611-26 114-020-11 C.P. \_\_\_\_\_





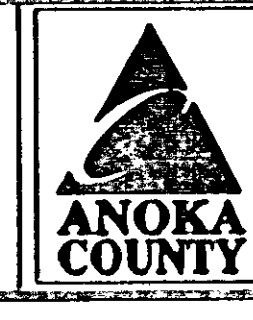
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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

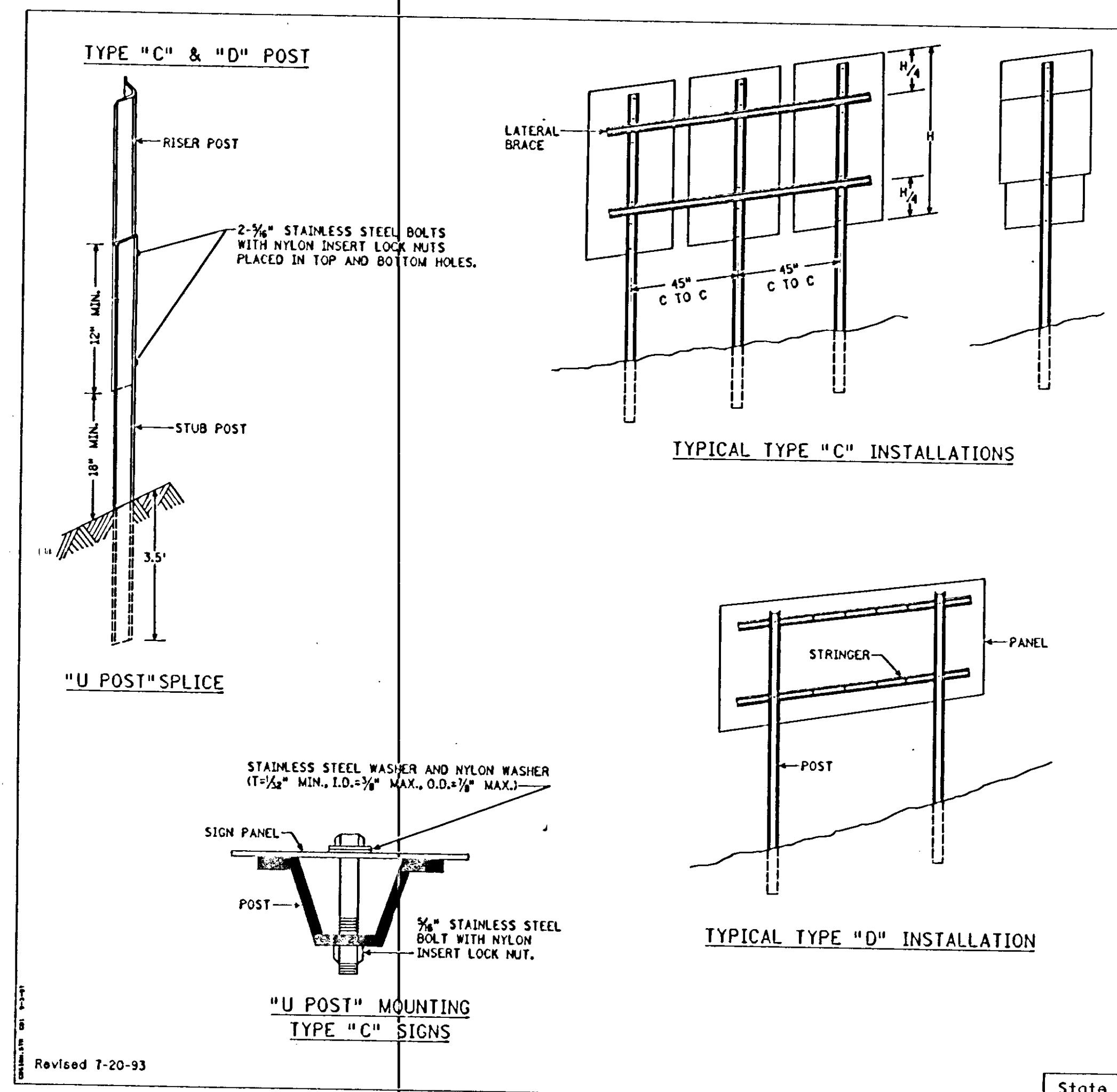
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DRAWN BY \_\_\_\_\_ DATE \_\_\_\_\_  
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**ANOKA COUNTY**  
**HIGHWAY DEPT.**

STATE PROJECT NO. 0215-50 02-611-26  
 0215-48 114-020-11  
 STATE AID PROJECT NO. \_\_\_\_\_  
 STATE AID PROJECT NO. \_\_\_\_\_  
 COUNTY PROJECT NO. \_\_\_\_\_

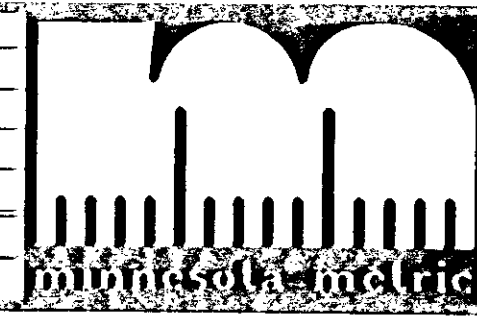


- NOTES:
1. USE 3" STUB POSTS, RISER POSTS, STRINGERS, KNEE BRACES, LATERAL BRACES AND KNEE BRACE STUB POSTS. ALL SHALL CONFORM TO MN/DOT 3401.
  2. FOR TYPE "D" SIGN POSTS LENGTHS AND SPACINGS, SEE SIGN DATA SHEET.
  3. TYPE "D" SIGN PANELS SHALL BE BOLTED TO STRINGERS AT 24" MAXIMUM INTERVALS IN ACCORDANCE WITH TYPE "D" STRINGER AND PANEL-JOINT DETAIL (SEE STANDARD SIGNS MANUAL).
  4. MOUNTING (PUNCHING CODE) FOR TYPE "C" SIGN PANELS SHALL BE AS INDICATED IN THE STANDARD SIGNS MANUAL UNLESS OTHERWISE SPECIFIED.
  5. ALL RISER (VERTICAL) "U POSTS" SHALL BE SPLICED. DRIVEN STUB POSTS SHALL BE AT LEAST 7' LONG.
  6. USE STAINLESS STEEL 5/16" BOLTS, WASHERS, AND NYLON INSERT LOCK NUTS AS SHOWN FOR ALL GROUND MOUNTED AND OVERHEAD MOUNTED SIGNS.
  7. STAINLESS STEEL WASHER WITH SAME DIMENSIONS SHALL BE PROVIDED BETWEEN ALL NYLON WASHERS AND BOLT HEADS.
  8. BRACING STUBS SHALL BE NO MORE THAN 4" ABOVE GROUND AND EMBEDDED AT LEAST 3/2".
  9. A-FRAME BRACKET SHALL BE STEEL CONFORMING TO MN/DOT 3306 AND GALVANIZED IN ACCORDANCE WITH MN/DOT 3394.
  10. COLLARS SHALL BE USED TO SHIM OVERLAYS AND DEMOUNTABLE LEGEND AWAY FROM PANEL WHERE INTERFERENCE WITH BOLT HEADS IS ENCOUNTERED. MN/DOT 3352.2A7.
  11. 2 AND 3 POST TYPE "C" SIGNS SHALL BE REINFORCED WITH AT LEAST ONE LATERAL BRACE. INSTALLATIONS WHERE THE TOTAL PANEL HEIGHT IS 60" OR MORE SHALL HAVE TWO LATERAL BRACES LOCATED APPROXIMATELY AT THE QUARTER POINTS.
  12. WHERE 2 OR MORE SINGLE POST SIGNS (TYPE "C") ARE MOUNTED SIDE BY SIDE, THEY SHALL BE REINFORCED Laterally BY AT LEAST 2 POST SECTIONS, BOLTED AT EACH POST AND LOCATED APPROXIMATELY AT THE QUARTER POINTS AS SHOWN IN SKETCH.

**"C" & "D" SIGN DETAILS**  
 DESIGN A  
 Sheet 1 of 3

State Proj. No. 0215-50 02-611-26  
 0215-48 114-020-11 Sheet No. 34 of 42 Sheets

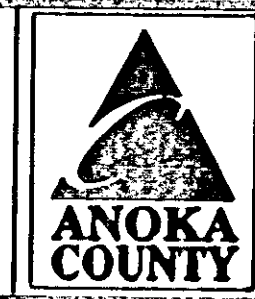
NO	DATE	BY	CKD	APPR	REVISION



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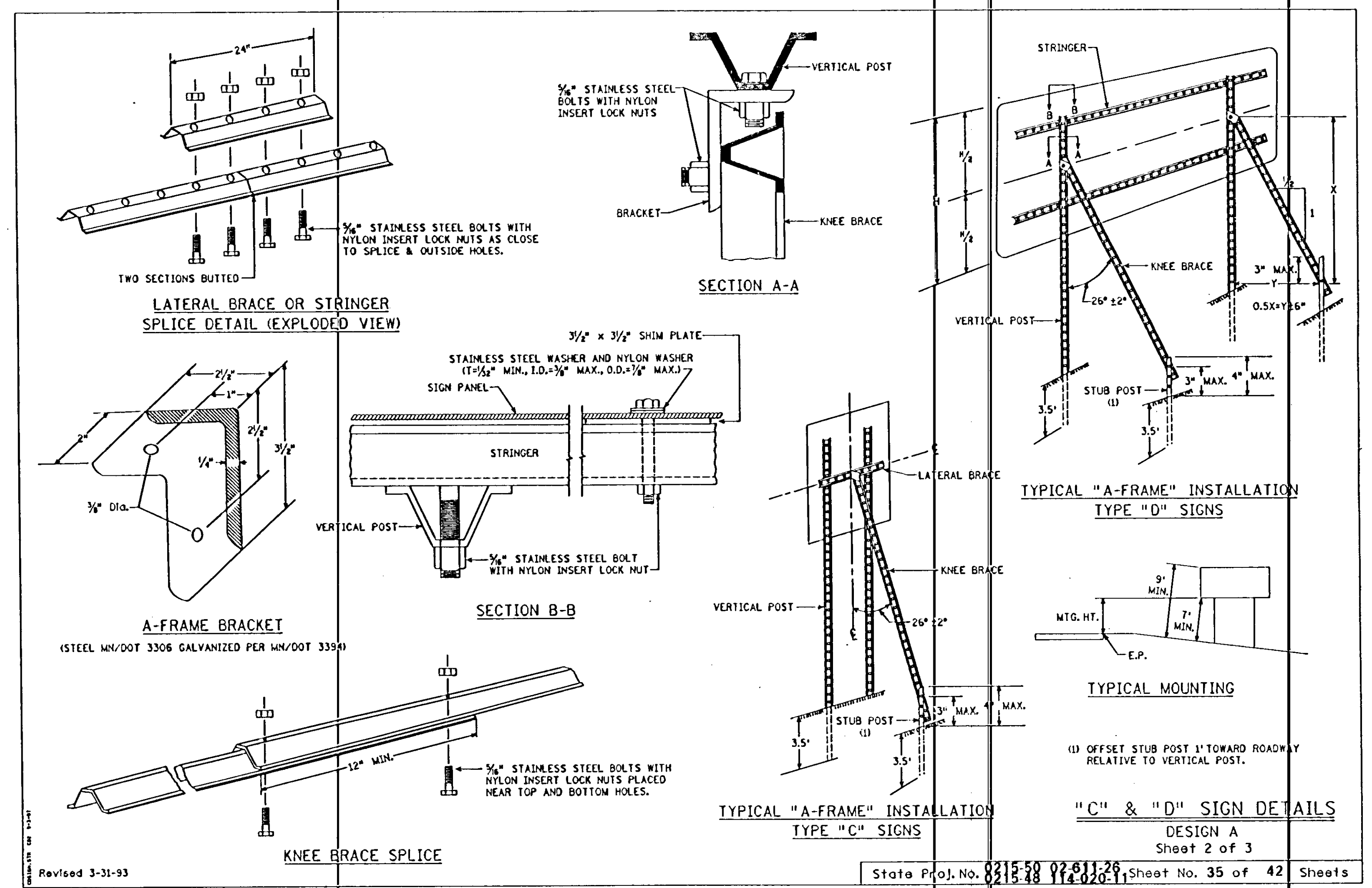
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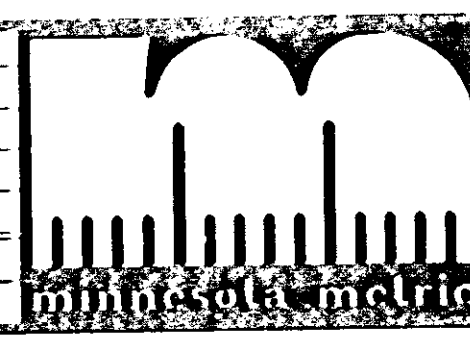
**ANOKA COUNTY**  
**HIGHWAY DEPT.**

STATE PROJECT NO. 0215-50 02-611-26  
 0215-48 114-020-11  
 STATE AID PROJECT NO. \_\_\_\_\_  
 STATE AID PROJECT NO. \_\_\_\_\_  
 COUNTY PROJECT NO. \_\_\_\_\_



State Proj. No. 0215-50 02-611-26  
 0215-48 114-020-11 Sheet No. 35 of 42 Sheets

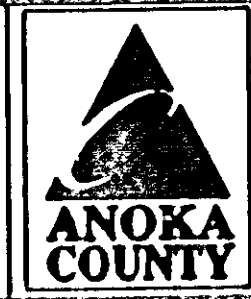
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DATE \_\_\_\_\_ REG. NO. \_\_\_\_\_

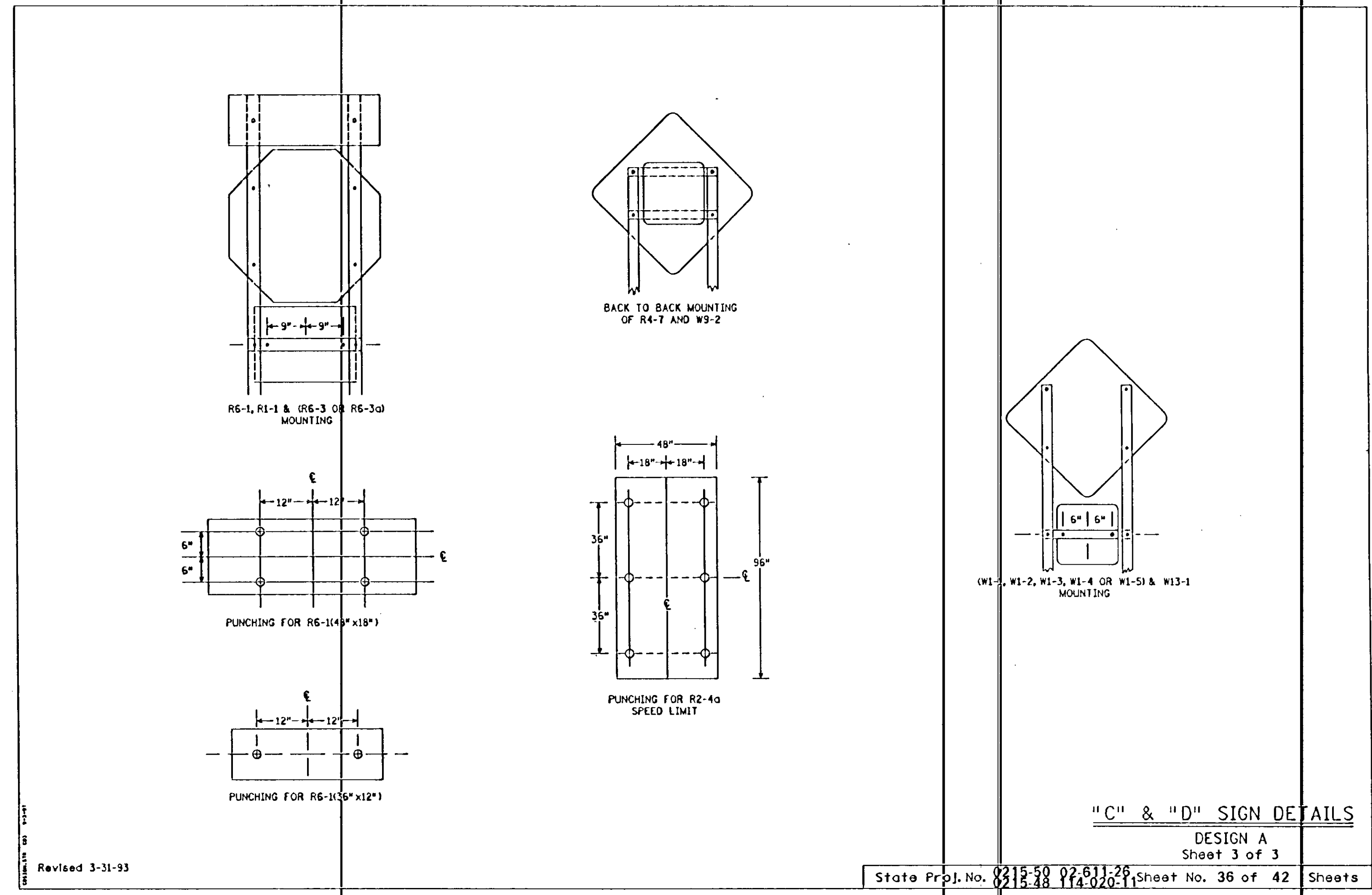
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**ANOKA COUNTY  
 HIGHWAY DEPT.**

STATE PROJECT NO. 0215-50 02-611-26  
 0215-48 114-020-11  
 STATE AID PROJECT NO. \_\_\_\_\_  
 STATE AID PROJECT NO. \_\_\_\_\_  
 COUNTY PROJECT NO. \_\_\_\_\_

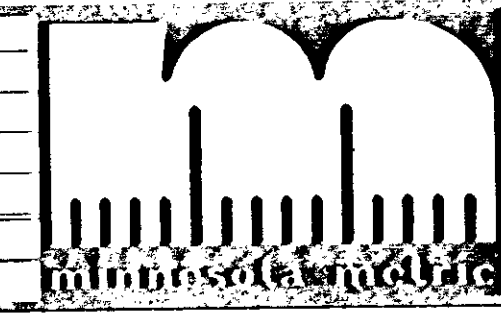
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"C" & "D" SIGN DETAILS  
DESIGN A  
Sheet 3 of 3

State Proj. No. 0215-50 02611-26 0215-48 114-020-11 Sheet No. 36 of 42 Sheets

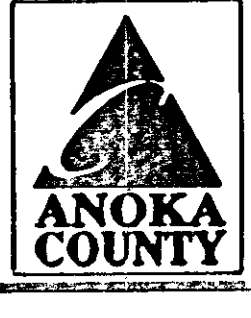
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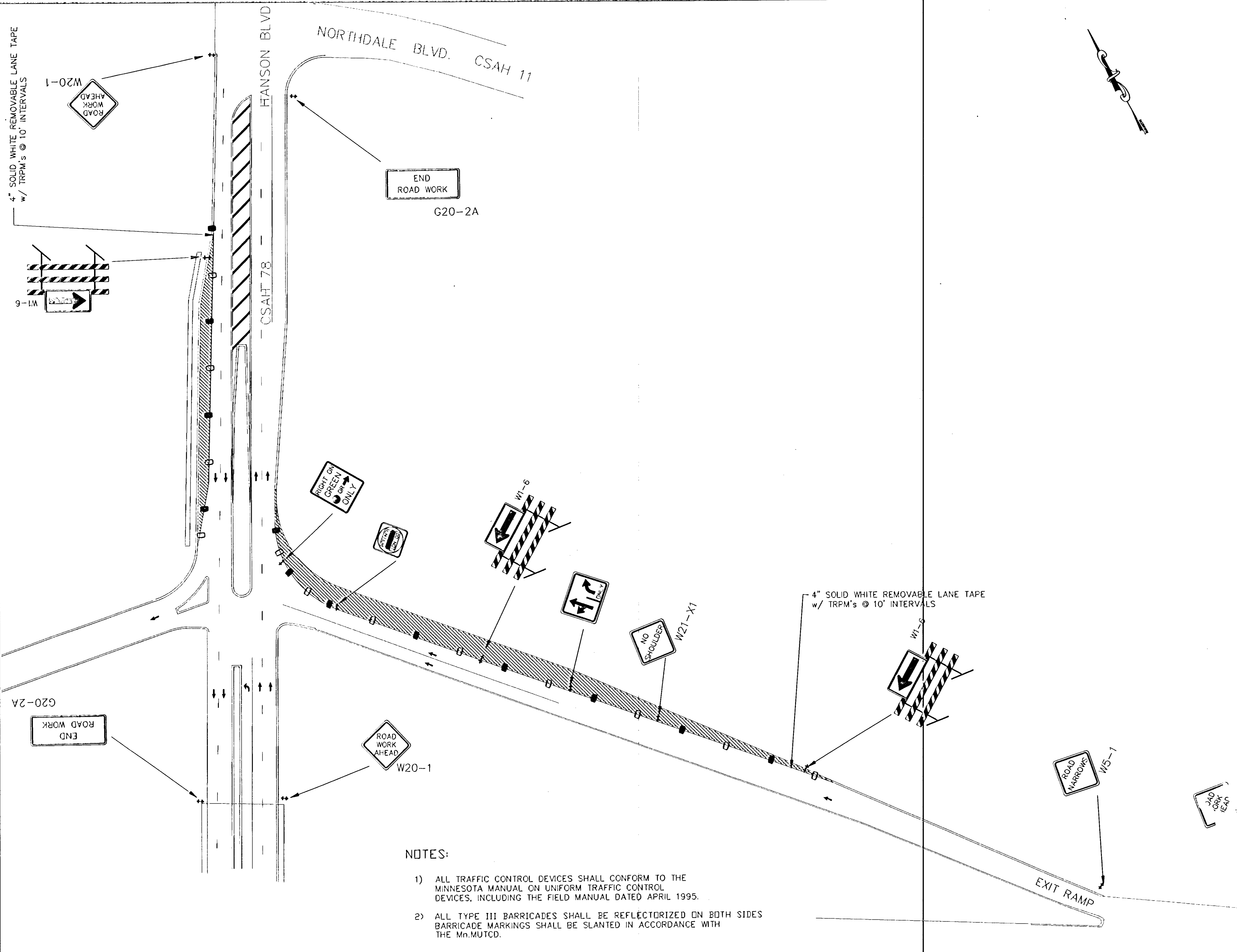
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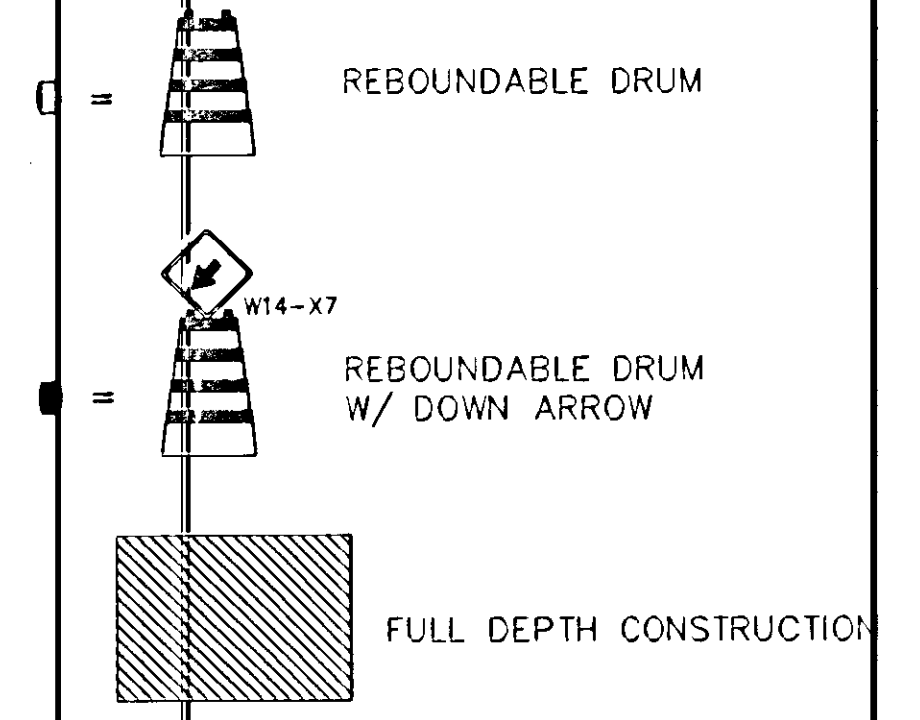


ANOKA COUNTY  
HIGHWAY DEPT.

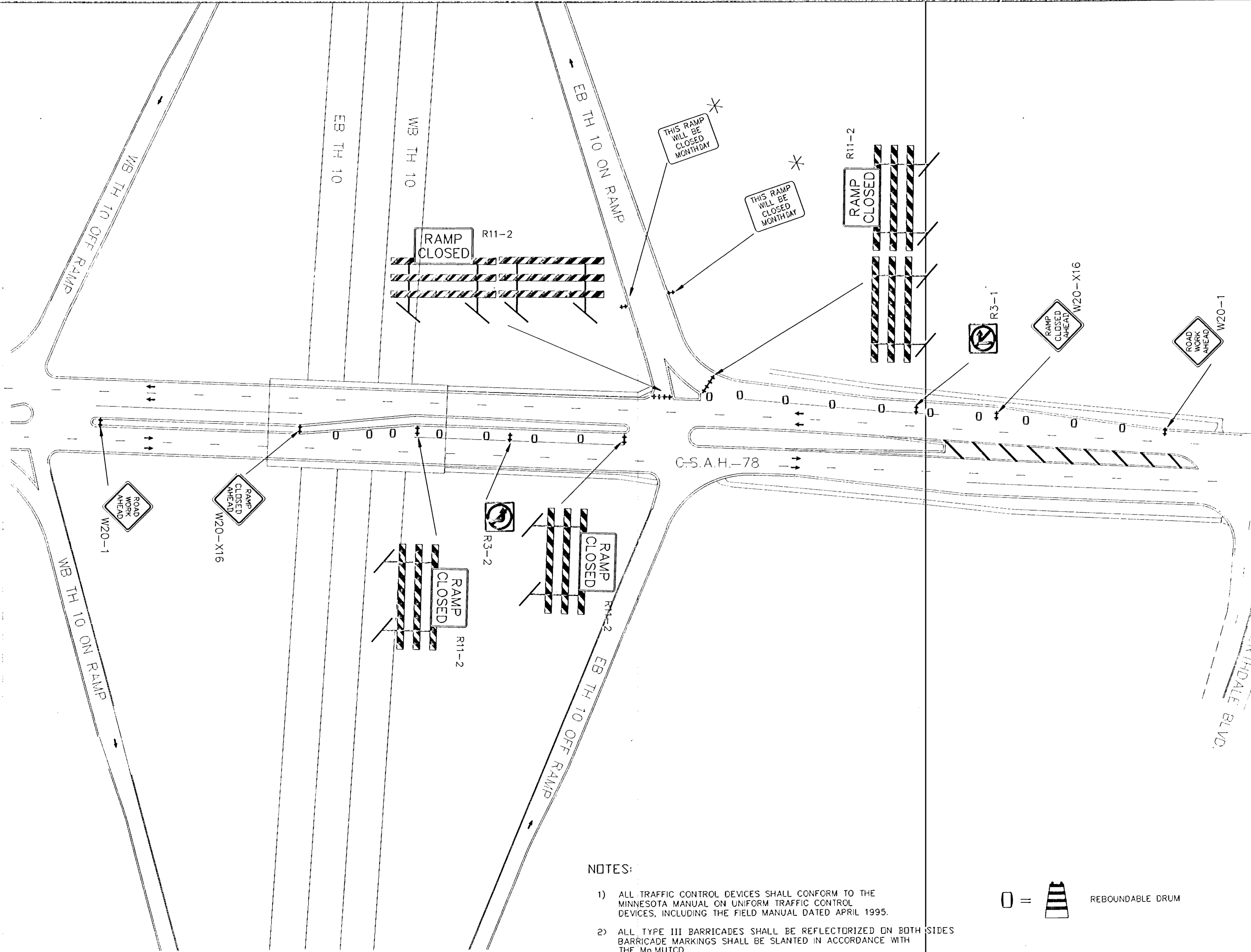
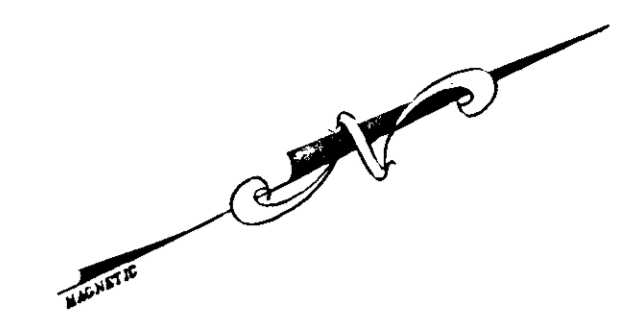
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0215-48 114-020-11  
STATE AID PROJECT NO. \_\_\_\_\_  
STATE AID PROJECT NO. \_\_\_\_\_  
COUNTY PROJECT NO. \_\_\_\_\_



- NOTES:
- 1) ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE FIELD MANUAL DATED APRIL 1995.
  - 2) ALL TYPE III BARRICADES SHALL BE REFLECTORIZED ON BOTH SIDES BARRICADE MARKINGS SHALL BE SLANTED IN ACCORDANCE WITH THE Mn.MUTCD.



TRAFFIC CONTROL  
STAGE 1

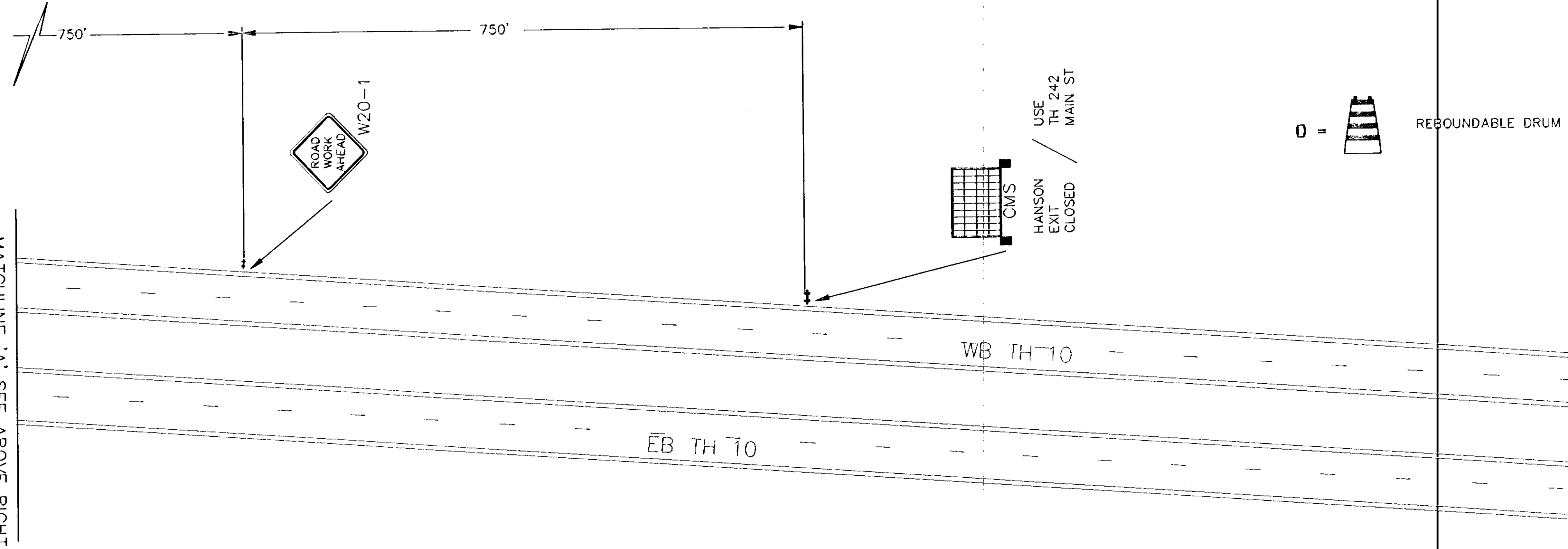
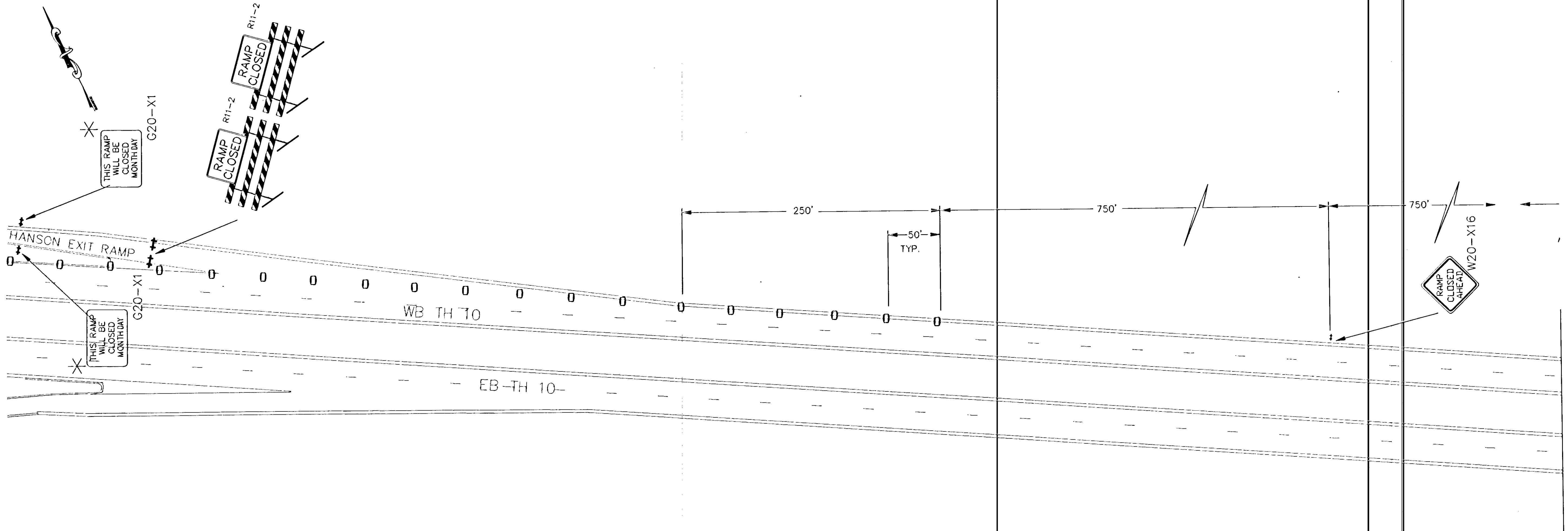



- 1) ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE FIELD MANUAL DATED APRIL 1995.
- 2) ALL TYPE III BARRICADES SHALL BE REFLECTORIZED ON BOTH SIDES BARRICADE MARKINGS SHALL BE SLANTED IN ACCORDANCE WITH THE Mn.MUTCD.



MILLING / PAVING RAMP 'A'

TRAFFIC CONTROL  
STAGE 2A



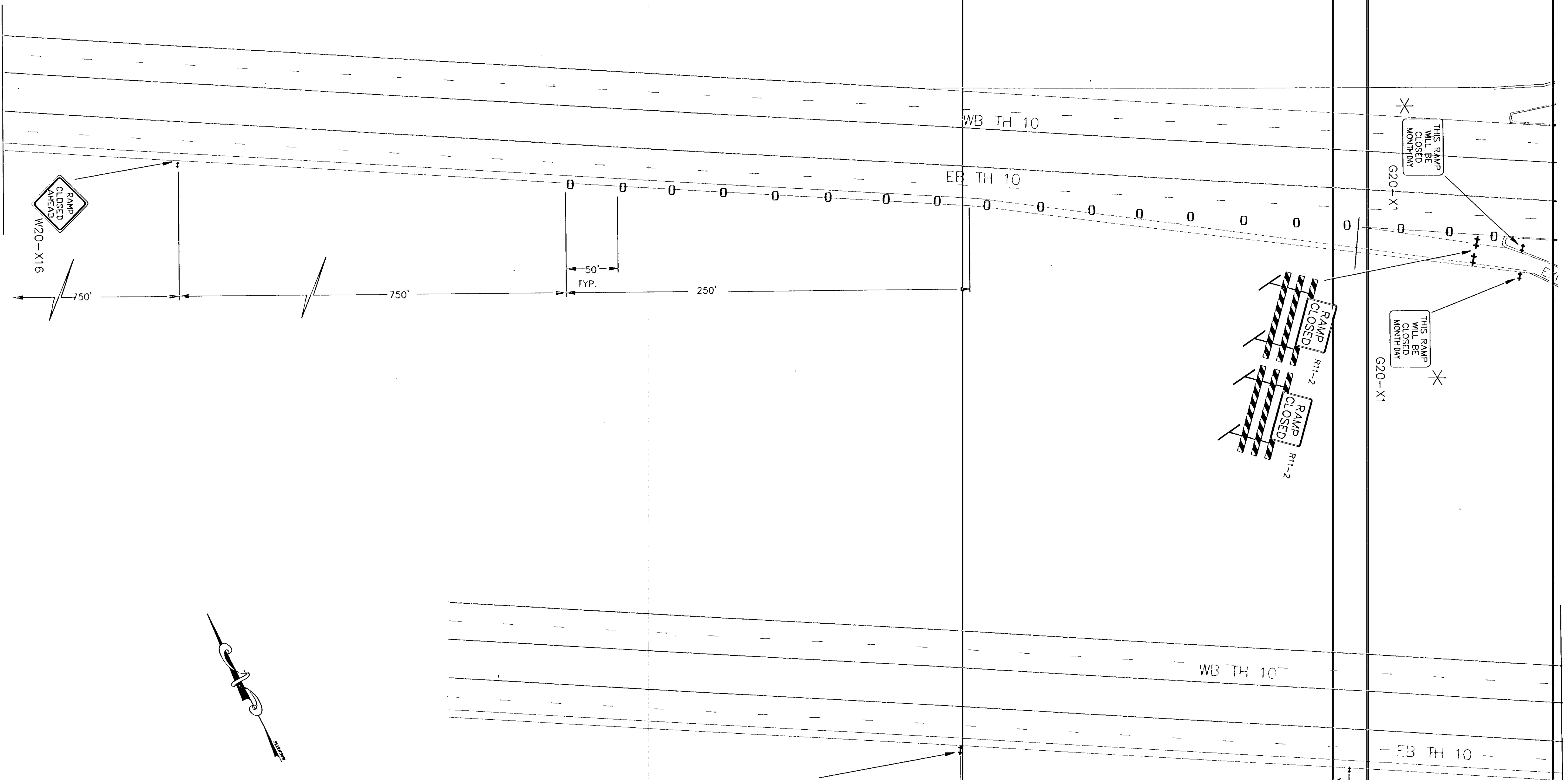
0 =  REBOUNDABLE DRUM

NOTES:

- 1) ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE FIELD MANUAL DATED APRIL 1995.
- 2) ALL TYPE III BARRICADES SHALL BE REFLECTORIZED ON BOTH SIDES BARRICADE MARKINGS SHALL BE SLANTED IN ACCORDANCE WITH THE Mn.MUTCD.

MILLING / PAVING RAMP 'B' TRAFFIC CONTROL STAGE 2B

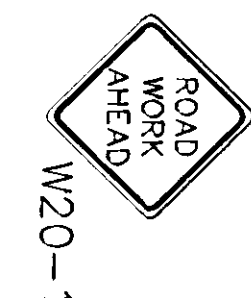
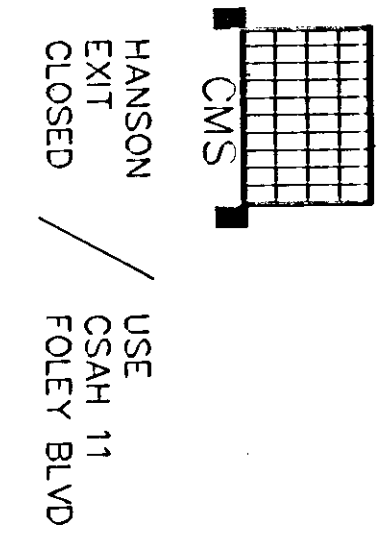
MATCHLINE 'A' SEE BELOW RIGHT



MATCHLINE 'A' SEE ABOVE LEFT

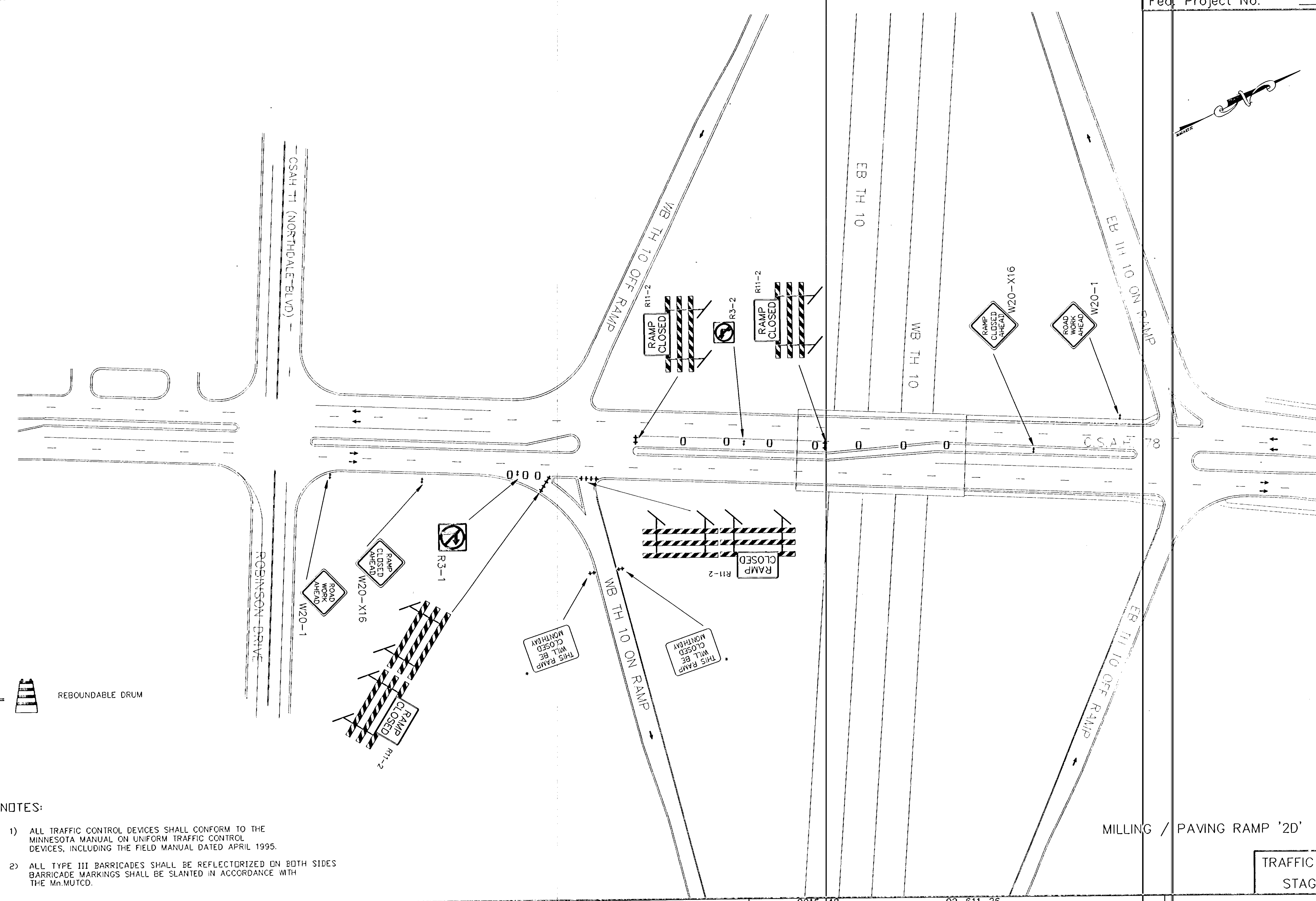
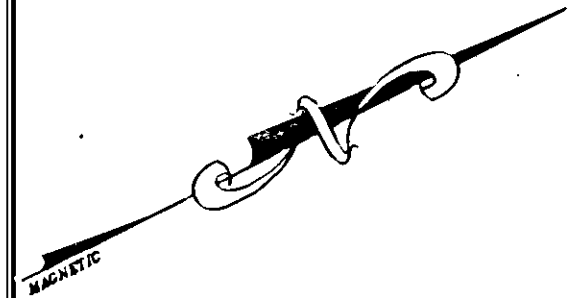
**NOTES:**

- 1) ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE FIELD MANUAL DATED APRIL 1995.
- 2) ALL TYPE III BARRICADES SHALL BE REFLECTORIZED ON BOTH SIDES BARRICADE MARKINGS SHALL BE SLANTED IN ACCORDANCE WITH THE Mn.MUTCD.



MILLING / PAVING RAMP 'C' TRAFFIC CONTROL STAGE 2C





NOTES:

- 1) ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE FIELD MANUAL DATED APRIL 1995.
- 2) ALL TYPE III BARRICADES SHALL BE REFLECTORIZED ON BOTH SIDES BARRICADE MARKINGS SHALL BE SLANTED IN ACCORDANCE WITH THE Mn.MUTCD.

MILLING / PAVING RAMP '2D'

TRAFFIC CONTROL  
STAGE 2D

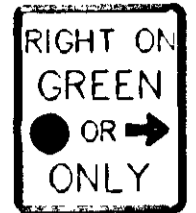


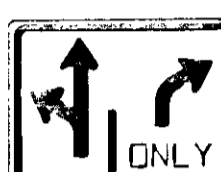


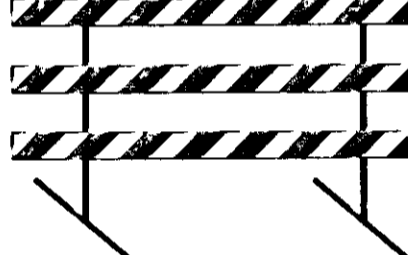
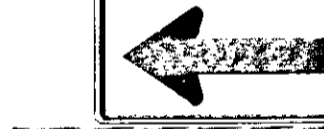
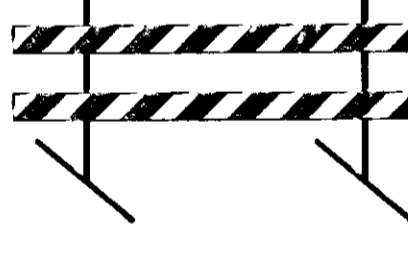
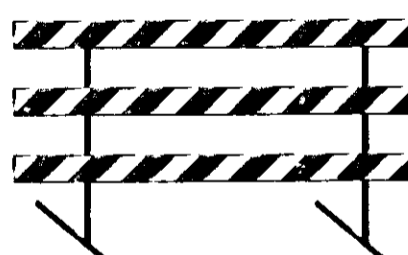

REVISIONS	DATE	BY







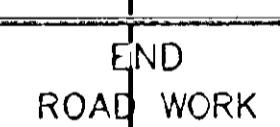
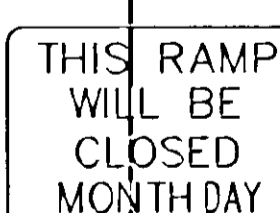
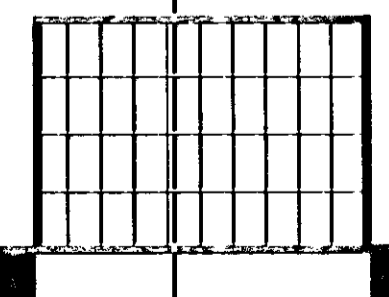
CERTIFIED BY \_\_\_\_\_ P.E. REG NO. \_\_\_\_\_ 19 \_\_\_\_\_

0215-48  
S.P. 0215-50

02-611-26  
S.P. 114-020-11 C.P. \_\_\_\_\_

Sheet No. 41 of 42 Sheets

M. U. T. C. D. CODE	SIZE	INSERT	STAGE 1 QUANTITY	STAGE 2A QUANTITY	STAGE 2B QUANTITY	STAGE 2C QUANTITY	STAGE 2D QUANTITY
R3-1	30" x 36"		1	0	0	0	0
R3-1	24" x 24"	 R3-1	0	0	0	1	1
R3-2	24" x 24"	 R3-2	0	0	0	1	1
R3-8B	36" x 30"		2	0	0	0	0
R5-1	30" x 30"		1	0	0	0	0
R11-2	48" x 30"		0	4	2	2	4
TYPE III	8 FOOT		0	4	2	2	4
W1-6L	48" x 24"		3	0	0	0	0
TYPE III	8 FOOT		3	0	0	0	0
TYPE III	8 FOOT		0	2	0	0	2
W5-1	48" x 48"		1	0	0	0	0

M. U. T. C. D. CODE	SIZE	INSERT	STAGE 1 QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY
W20-1	48" x 48"		3	1	1	2	2
W20-X16	48" x 48"		0	1	1	2	2
W21-X1	48" x 48"		1	0	0	0	0
W14-X7L	24" x 24"		12	0	0	0	0
REBOUNDABLE DRUM			12	0	0	0	0
REBOUNDABLE DRUM			12	20	20	14	8
G20-2A	48" x 24"		2	0	0	0	0
G20-X1	60" x 48"		0	2	2	2	2
PORTABLE CHANGEABLE MESSAGE SIGN			0	0	1	1	0
					FOR MESSAGE SEE SHEET 32 of 35	FOR MESSAGE SEE SHEET 33 of 35	

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NOTE:  
THESE SIGNS TO BE INSTALLED  
WITH AS MUCH LEAD TIME AS  
SCHEDULING WILL ALLOW.

REVISIONS	BY	DATE

TRAFFIC CONTROL  
QUANTITIES