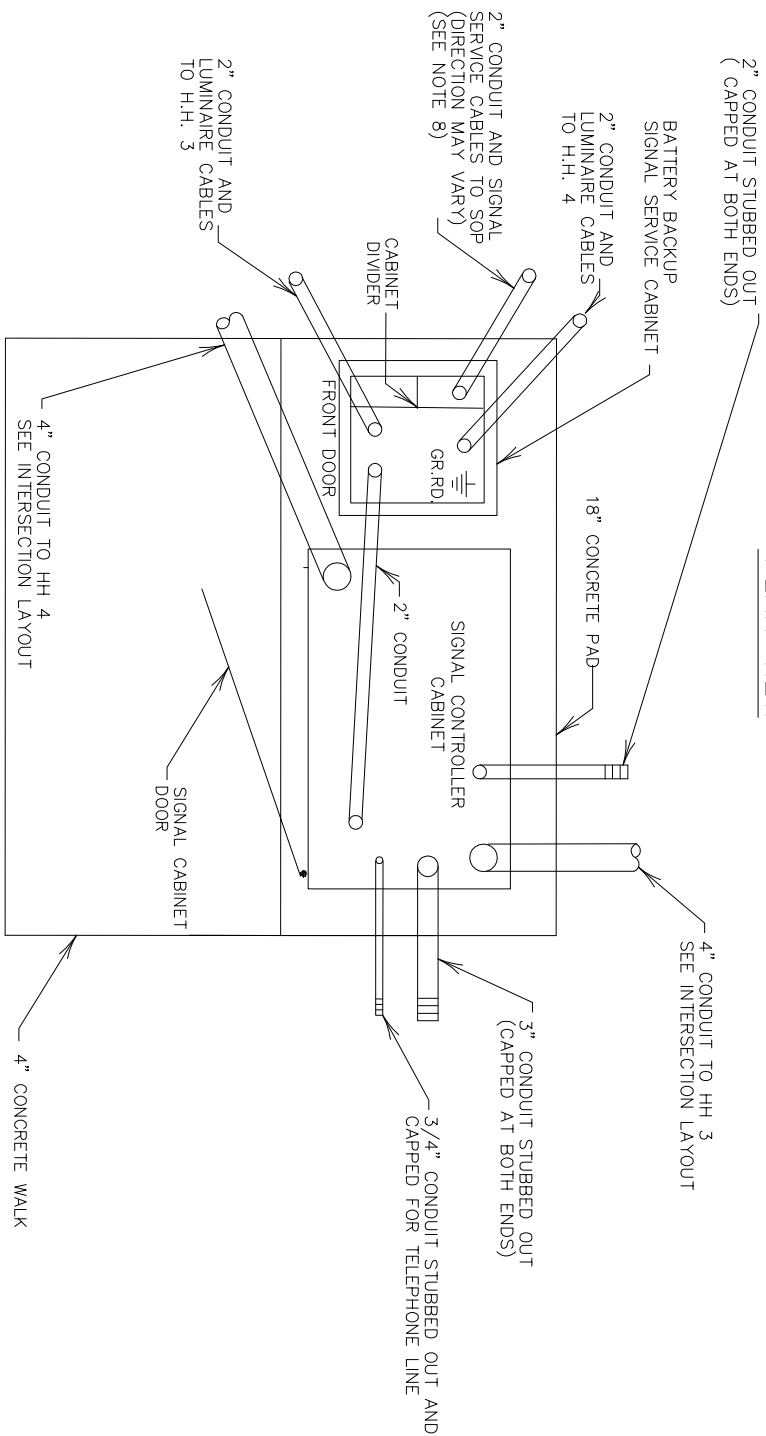


# TYPICAL PAD WITH CONTROLLER CABINET AND SERVICE CABINET

SEE INTERSECTION LAYOUT FOR CABLE INFORMATION (NOT TO SCALE)

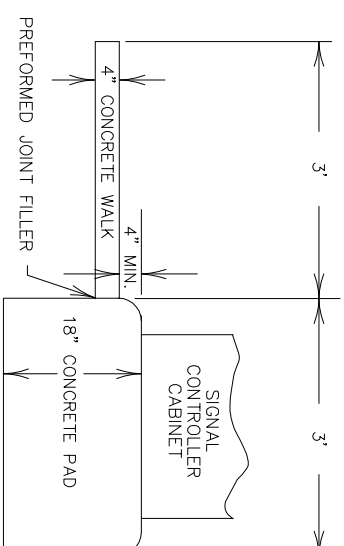
## PLAN VIEW



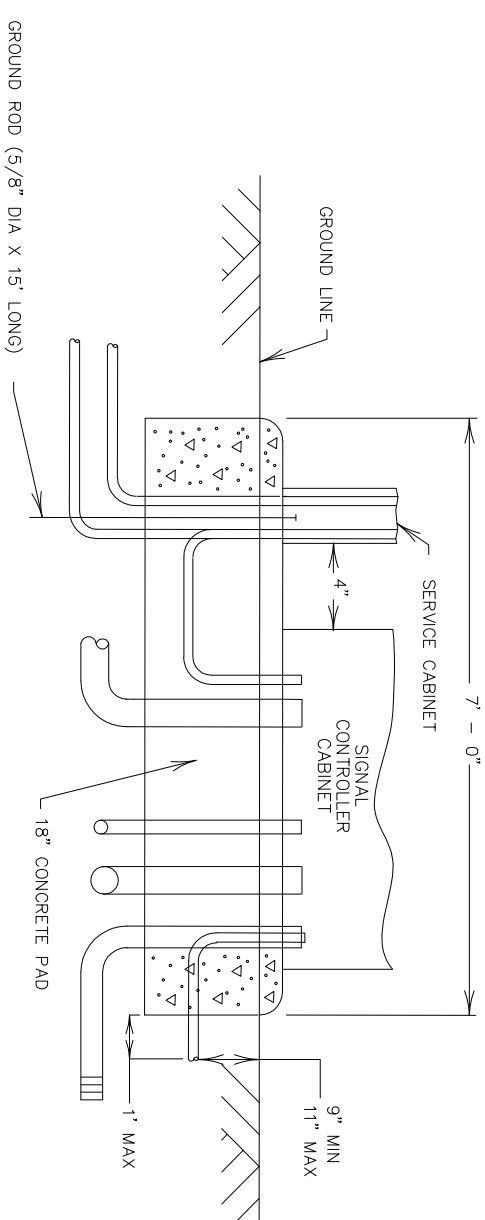
### NOTES:

1. THE ANCHOR RODS, NUTS AND WASHERS FOR THE CONTROLLER CABINET SHALL BE FURNISHED BY MNDOT.
2. THE UPPER PART OF THE EQUIPMENT PAD SHALL BE BEVELLED OR CHAMFERED IN A NEAT MANNER AS DIRECTED BY THE ENGINEER.
3. THE TOP OF THE CONDUITS SHALL BE THREADED AND CAPPED AFTER INSTALLATION (UNTIL CABLES ARE INSTALLED).
4. CONDUIT SHALL PROJECT A MINIMUM OF 2" ABOVE THE CONCRETE AND SHALL BE LOCATED INSIDE THE CABINET WHERE DIRECTED BY THE ENGINEER, BUT SHALL NOT INTERFERE WITH THE CABINET FUNCTIONS (SUPPORTING MEMBERS, ETC.).
5. CONCRETE MIX 3A32 OR EQUAL SHALL BE USED FOR THE EQUIPMENT PAD AND SIDEWALK.
6. CONDUITS WITH BOTH ENDS TERMINATING WITHIN THE PAD SHALL NOT BE INSTALLED BELOW THE CONCRETE.
7. THE EXACT LOCATION OF CONDUITS WITHIN THE PAD SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.
8. PLACEMENT OF THIS CONDUIT IN PROPER LOCATION IS CRITICAL.

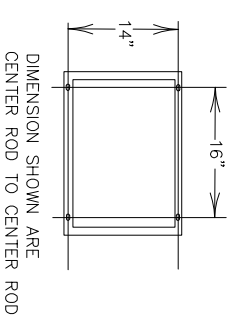
## SIDE VIEW



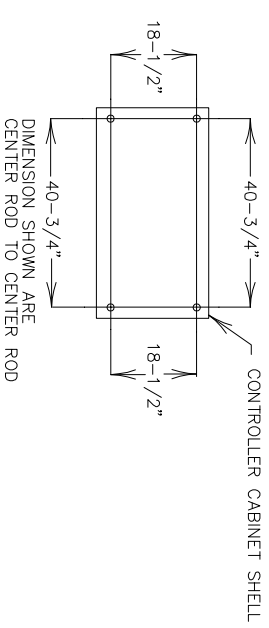
## FRONT VIEW



B.B. SERVICE CABINET  
BOLT PATTERN



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



**CITY OF ELK RIVER**  
**JACKSON AVENUE AND SCHOOL STREET**  
**INTERSECTION IMPROVEMENTS**

**TRAFFIC SIGNAL DETAILS**

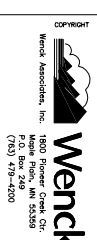
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Print Name: EDWARD F. TERHAAR

Signature: *Edward F. Terhaar*

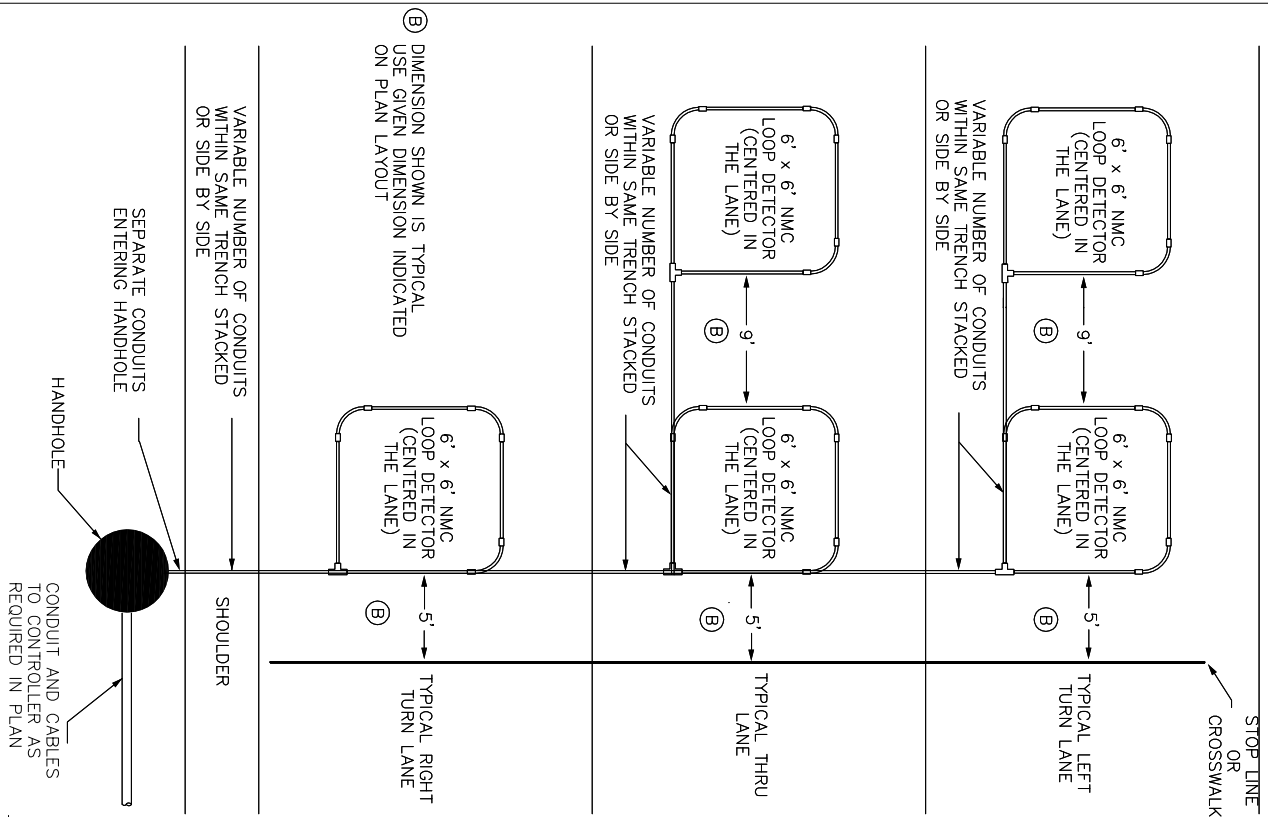
Date: 05-29-07 License # 24441

REVISIONS			
NO.	DATE	BY	DESCRIPTION



DRAWN BY: EFT  
CHECKED BY: EFT  
DESIGNED BY: EFT  
JOB NO. 226073

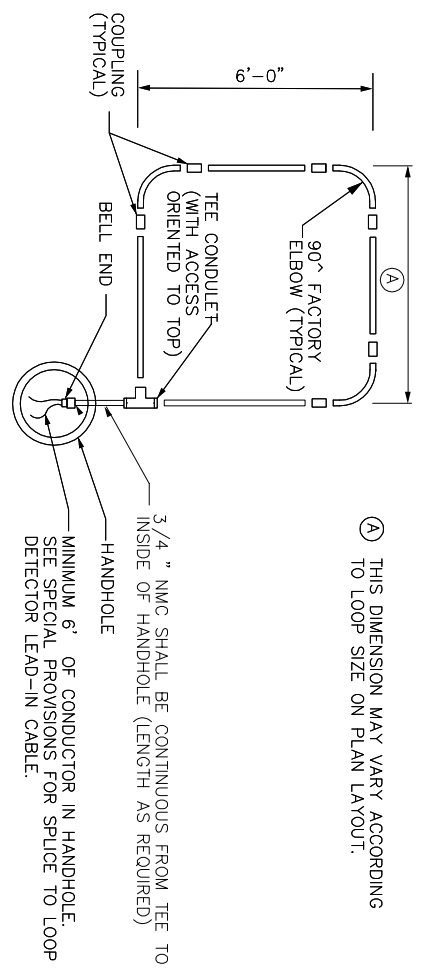
# TYPICAL CROSS STREET NMC LOOP DETECTOR LAYOUT



## NOTES:

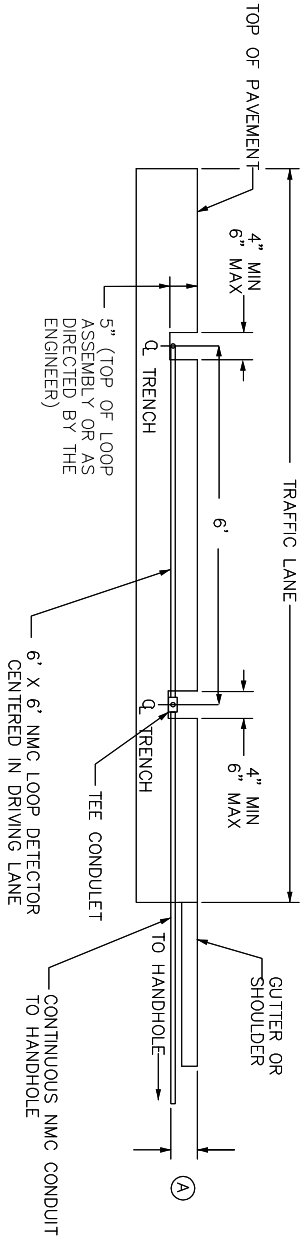
- ROADWAY LOOP DETECTOR CONDUCTORS AND LOOP DETECTOR LEAD IN CABLES SHALL BE IN ACCORDANCE WITH MN/DOT SPEC 3815.
- THE 3/4" NON-METALLIC CONDUIT (NMC) AND FITTINGS SHALL BE SCHEDULE 40 HEAVY WALL RIGID POLYVINYL CHLORIDE (PVC). SEE SPEC. 3803.
- THREE CORNERS OF EACH LOOP DETECTOR SHALL BE A 90° FACTORY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

## TYPICAL NMC LOOP DETECTOR DETAIL



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

# TYPICAL NMC LOOP DETECTOR INSTALLATION INPLACE PAVEMENT



## NOTES:

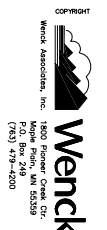
- USE THE LOOP DETECTOR TO BE INSTALLED FOR THE PURPOSE OF MARKING THE PAVEMENT LOCATION FOR THE MILLING OPERATION.
- TO ACHIEVE FULL TRENCH DEPTH FOR CONDUIT PLACEMENT, MILL BEYOND THE DESIRED PAVEMENT MARKING.
- PROVIDE A MINIMUM 5" CLEARANCE, MEASURED FROM THE TOP OF THE FINISHED PAVEMENT TO HIGHEST POINT OF LOOP ASSEMBLY (INCLUDING CONDULET).
- AN AIR COMPRESSOR UNIT (50 HP) IS REQUIRED FOR REMOVING ALL LOOSE MATERIAL FROM TRENCH PRIOR TO TACK COAT APPLICATION.
- APPLY A TACK COAT AT A UNIFORM RATE TO THE BOTTOM AND EDGES OF THE MILLED AREA. USE AN EMULSIFIED ASPHALT PER SPEC. 2357.2A
- MIXTURE USED TO FILL THE RETROFIT LOOP DETECTOR TRENCHES SHALL MEET THE REQUIREMENTS OF MNDOT SPECIFICATION 2360. AGGREGATE SIZE A OR B WILL BE ALLOWED WHEN 2360 IS UTILIZED. OTHER WEARING COURSE MIXTURE TYPES ARE ALLOWED WHEN APPROVED BY THE ENGINEER.
- THE USE OF PETROLEUM DISTILLATES AS AN ANTI-ADHESIVE AGENT IS NOT ALLOWED. REFER TO MN/DOT TECH. MEMO NO. 94-16-MRE-05 DATED 3/10/94 FOR ADDITIONAL INFORMATION.
- COMPACTION SHALL BE OBTAINED BY THE ORDINARY COMPACTION METHOD. BACKFILL THE TRENCH WITH A MINIMUM OF TWO LIFTS AND COMPACT EACH LIFT. BEFORE COMPACTING THE FIRST LIFT ENSURE THAT THERE IS ADEQUATE MIXTURE ON EACH SIDE AND ABOVE THE CONDUIT SO THAT THE CONDUIT IS NOT DAMAGED DURING COMPACTION OPERATIONS.
- THE COMPACTED MIXTURE IN THE TRENCH SHOULD BE LEFT 1/4" TO 1/2" ABOVE THE ADJACENT PAVEMENT SURFACE TO PROVIDE FOR ADDITIONAL COMPACTION BY TRAFFIC.
- APPLY A BITUMINOUS FOG SEAL ON THE NEWLY COMPACTED MIXTURE TO PROVIDE AN ADDITIONAL SURFACE SEAL (EMULSIFIED ASPHALT 2355.2A). DRY SAND SHALL BE SPREAD ON THE FOG SEAL TO PREVENT MATERIAL PICKUP AND TRACKING.
- WHEN INSTALLING NMC LOOPS INTO PRE-ROADWAY AGGREGATE BASE, DEPTH OF TOP OF CONDUIT TO TOP OF AGGREGATE SHALL NOT EXCEED 2".
- WHEN LOOP DETECTORS ARE MILLED INTO CONCRETE SURFACES, THE TRENCHES SHALL BE FILLED USING A GROUTING MATERIAL WHICH MEETS MN/DOT SPEC 2620 OR OTHER MATERIAL AS APPROVED BY THE ENGINEER. BITUMINOUS FILL IS ACCEPTABLE WHEN OVERLAYING CONCRETE TRENCHES.
- MILLING IS REQUIRED FOR ALL NMC LOOP INSTALLATIONS. WHEN LOOPS ARE MILLED INTO EXISTING MILLED SURFACE THAT WILL BE OVERLAIN WITH BITUMINOUS, THE MINIMUM TRENCH DEPTH SHALL BE NO LESS THAN THE HIGHEST LOOP ASSEMBLY IN THE TRENCH.
- WHEN MILLING INTO EXISTING BITUMINOUS SURFACE, BE ADVISED THAT CONCRETE MAY BE ENCOUNTERED UNDER THE BITUMINOUS SURFACE.

# CITY OF ELK RIVER JACKSON AVENUE AND SCHOOL STREET INTERSECTION IMPROVEMENTS

## TRAFFIC SIGNAL DETAILS

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
Print Name: EDWARD F. TERHAAR  
Signature: *Edward F. Terhaar*  
Date: 05-29-07 License # 24441

REVISIONS			
NO.	DATE	BY	DESCRIPTION



DRAWN BY: EFT  
CHECKED BY: EFT  
DESIGNED BY: EFT  
JOB NO. 226073

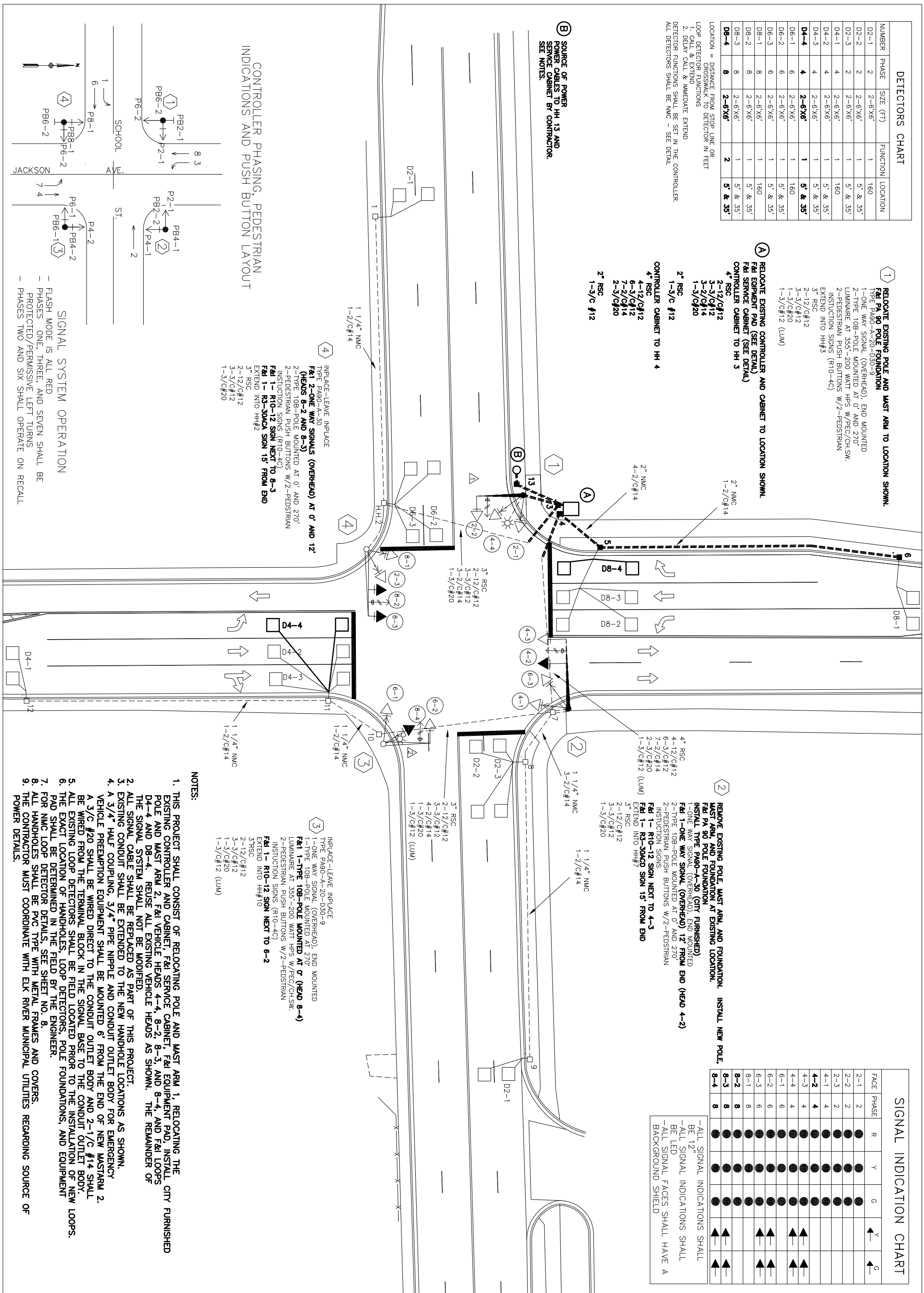
DETECTORS CHART				
NUMBER	PHASE	SIZE (FT)	FUNCTION	LOCATION
D2-1	2	2-6'X6'	1	160
D2-2	2	2-6'X6'	1	5' & 35'
D2-3	2	2-6'X6'	1	5' & 35'
D4-1	4	2-6'X6'	1	160
D4-2	4	2-6'X6'	1	5' & 35'
D4-3	4	2-6'X6'	1	5' & 35'
<b>D4-4</b>	<b>4</b>	<b>2-6'X6'</b>	<b>1</b>	<b>5' &amp; 35'</b>
D6-1	6	2-6'X6'	1	160
D6-2	6	2-6'X6'	1	5' & 35'
D6-3	6	2-6'X6'	1	5' & 35'
D8-1	8	2-6'X6'	1	160
D8-2	8	2-6'X6'	1	5' & 35'
D8-3	8	2-6'X6'	1	5' & 35'
<b>D8-4</b>	<b>8</b>	<b>2-6'X6'</b>	<b>1</b>	<b>5' &amp; 35'</b>

LOCATION = DISTANCE FROM STOP LINE OR CROSSWALK TO DETECTOR IN FEET

LOOP DETECTOR FUNCTIONS  
 1. CALL & EXTEND  
 2. DELAY CALL & IMMEDIATE EXTEND  
 DETECTOR FUNCTIONS SHALL BE SET IN THE CONTROLLER.  
 ALL DETECTORS SHALL BE NMC - SEE DETAIL

- 1** RELOCATE EXISTING POLE AND MAST ARM TO LOCATION SHOWN.  
**F&I PA 90 POLE FOUNDATION**  
 1-ONE WAY SIGNAL (OVERHEAD), END MOUNTED  
 2-TYPE 108-POLE MOUNTED AT 0' AND 270'  
 LUMINAIRE AT 355'-200 WATT HPS W/PEC/GH;SW.  
 2-PEDESTRIAN PUSH BUTTONS W/2-PEDESTRIAN INSTRUCTION SIGNS (R10-4C)  
 EXTEND INTO HH#3  
 3" RSC  
 2-12/C#12  
 3-3/C#12  
 3-2/C#14  
 1-3/C#20
- 2** RELOCATE EXISTING CONTROLLER AND CABINET TO LOCATION SHOWN.  
**F&I EQUIPMENT PAD (SEE DETAIL)**  
**F&I SERVICE CABINET (SEE DETAIL)**  
 CONTROLLER CABINET TO HH 3  
 4" RSC  
 2-12/C#12  
 3-3/C#12  
 3-2/C#14  
 1-3/C#20
- 3** RSC  
 2-12/C#12  
 3-3/C#12  
 3-2/C#14  
 1-3/C#20
- 4** RSC  
 2-12/C#12  
 3-3/C#12  
 3-2/C#14  
 1-3/C#20

**B** SOURCE OF POWER SERVICE CABLES TO HH 13 AND SEE NOTES.



SIGNAL INDICATION CHART					
FACE	PHASE	R	Y	G	Y
2-1	2	●	●	●	←
2-2	2	●	●	●	←
2-3	2	●	●	●	←
4-1	4	●	●	●	←
<b>4-2</b>	<b>4</b>	●	●	●	←
4-3	4	●	●	●	←
4-4	4	●	●	●	←
6-1	6	●	●	●	←
6-2	6	●	●	●	←
6-3	6	●	●	●	←
8-1	8	●	●	●	←
<b>8-2</b>	<b>8</b>	●	●	●	←
<b>8-3</b>	<b>8</b>	●	●	●	←
<b>8-4</b>	<b>8</b>	●	●	●	←

-ALL SIGNAL INDICATIONS SHALL BE 12"  
 -ALL SIGNAL INDICATIONS SHALL BE LED  
 -ALL SIGNAL FACES SHALL HAVE A BACKGROUND SHIELD

- NOTES:**
- THIS PROJECT SHALL CONSIST OF RELOCATING POLE AND MAST ARM 1, RELOCATING THE EXISTING CONTROLLER AND CABINET, F&I SERVICE CABINET, F&I EQUIPMENT PAD, INSTALL CITY FURNISHED POLE AND MAST ARM 2, F&I VEHICLE HEADS 4-4, 8-2, 8-3, AND 8-4, AND 8-4, AND F&I LOOPS D4-4 AND D8-4. REUSE ALL EXISTING VEHICLE HEADS AS SHOWN. THE REMAINDER OF THE SIGNAL SYSTEM SHALL NOT BE MODIFIED.
  - ALL SIGNAL CABLE SHALL BE REPLACED AS PART OF THIS PROJECT.
  - EXISTING CONDUIT SHALL BE EXTENDED TO THE NEW HANDHOLE LOCATIONS AS SHOWN.
  - A 3/4" HALF COUPLING, 3/4" PIPE NIPPLE AND CONDUIT OUTLET BODY FOR EMERGENCY VEHICLE PREEMPTION EQUIPMENT SHALL BE MOUNTED 6' FROM THE END OF NEW MASTARM 2.
  - A 3/C #20 SHALL BE WIRED DIRECT TO THE CONDUIT OUTLET BODY AND 2-1/C #14 SHALL BE WIRED FROM THE TERMINAL BLOCK IN THE SIGNAL BASE TO THE CONDUIT OUTLET BODY.
  - ALL EXISTING LOOP DETECTORS SHALL BE FIELD LOCATED PRIOR TO THE INSTALLATION OF NEW LOOPS.
  - THE EXACT LOCATION OF HANDHOLES, LOOP DETECTORS, POLE FOUNDATIONS, AND EQUIPMENT PAD SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
  - FOR NMC LOOP DETECTOR DETAILS, SEE SHEET NO. 8.
  - ALL HANDHOLES SHALL BE PVC TYPE WITH METAL FRAMES AND COVERS.
  - THE CONTRACTOR MUST COORDINATE WITH ELK RIVER MUNICIPAL UTILITIES REGARDING SOURCE OF POWER DETAILS.

**CITY OF ELK RIVER**  
**JACKSON AVENUE AND SCHOOL STREET**  
**INTERSECTION IMPROVEMENTS**

**TRAFFIC SIGNAL LAYOUT**

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Print Name: EDWARD F. TERHAAR

Signature: *Edward F. Terhaar*

Date: 05-29-07 License # 24441

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 DESIGNED BY: EFT  
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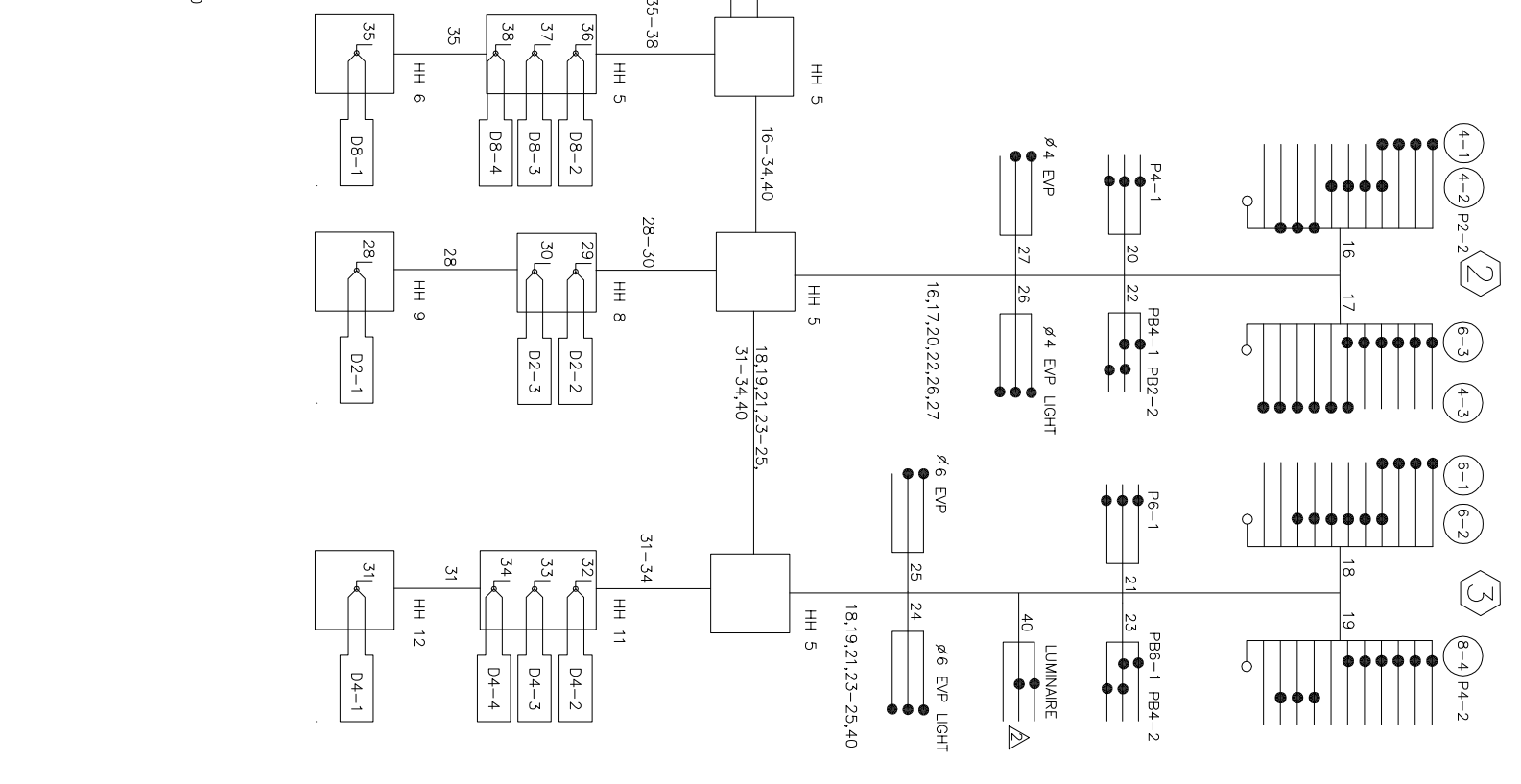
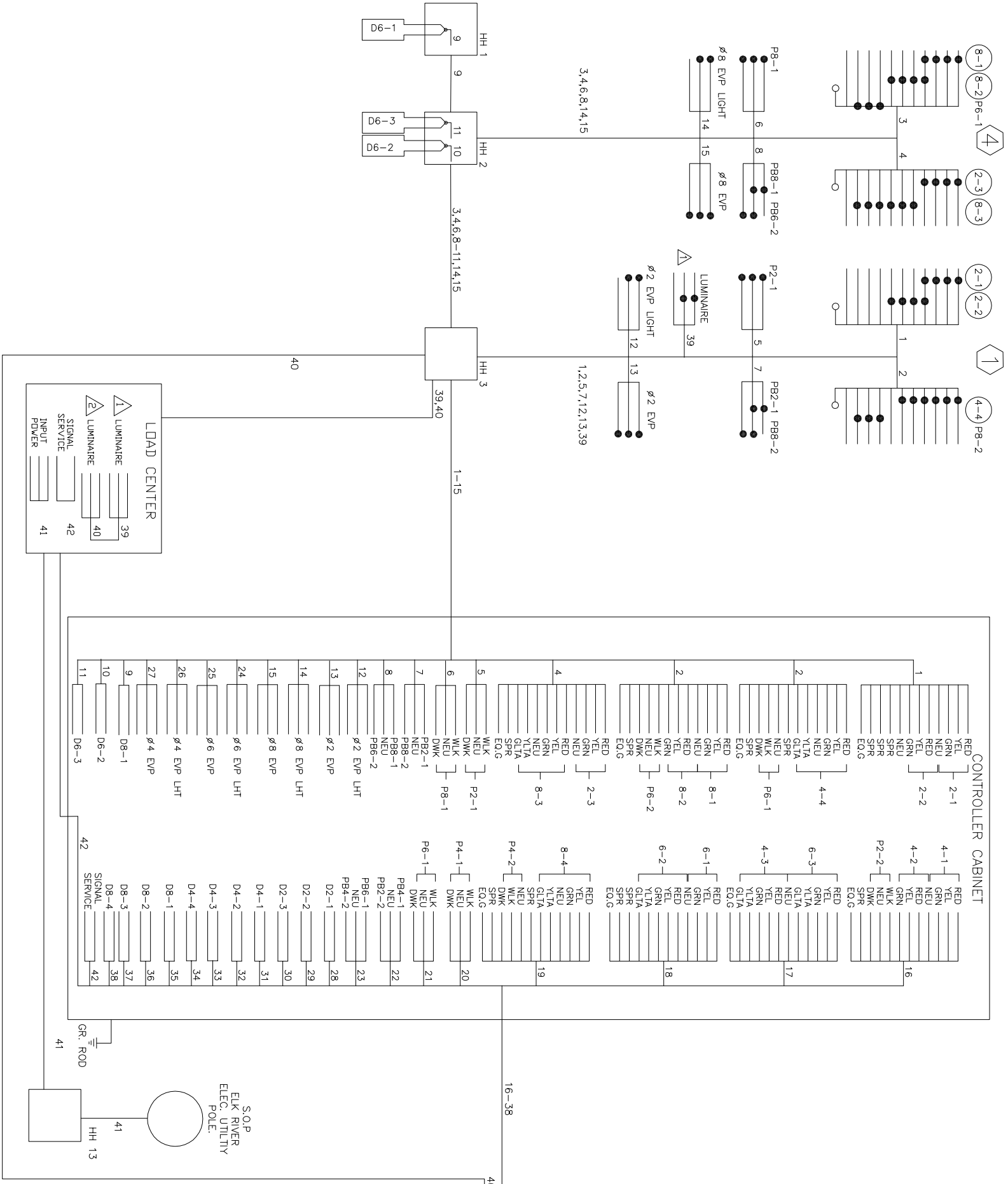
REVISIONS

NO.	DATE	BY	DESCRIPTION

Wenck  
 1800 Riverwood Court  
 Elk River, MN 55007  
 (612) 478-4200

SHEET **9**

SHEETS **12**



**Wenck**  
Minnesota Association of Traffic Engineers  
 1800 River Creek Ct  
 P.O. Box 248  
 St. Paul, MN 55109  
 (612) 979-4200

**CITY OF ELK RIVER**  
**JACKSON AVENUE AND SCHOOL STREET**  
**INTERSECTION IMPROVEMENTS**

**TRAFFIC SIGNAL WIRING DIAGRAM**

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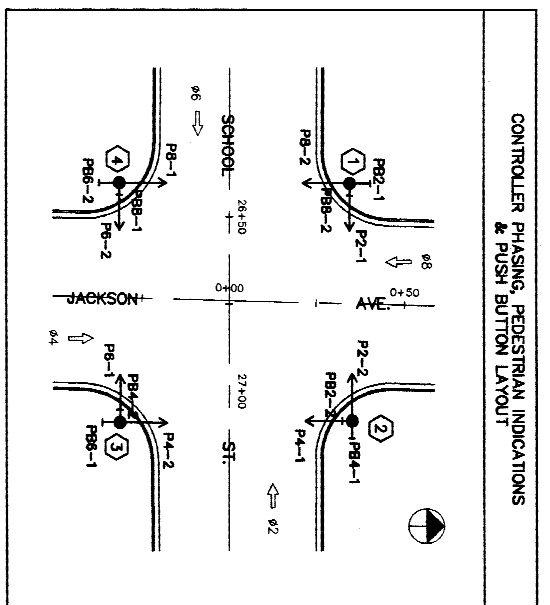
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DESIGNED BY: EFT

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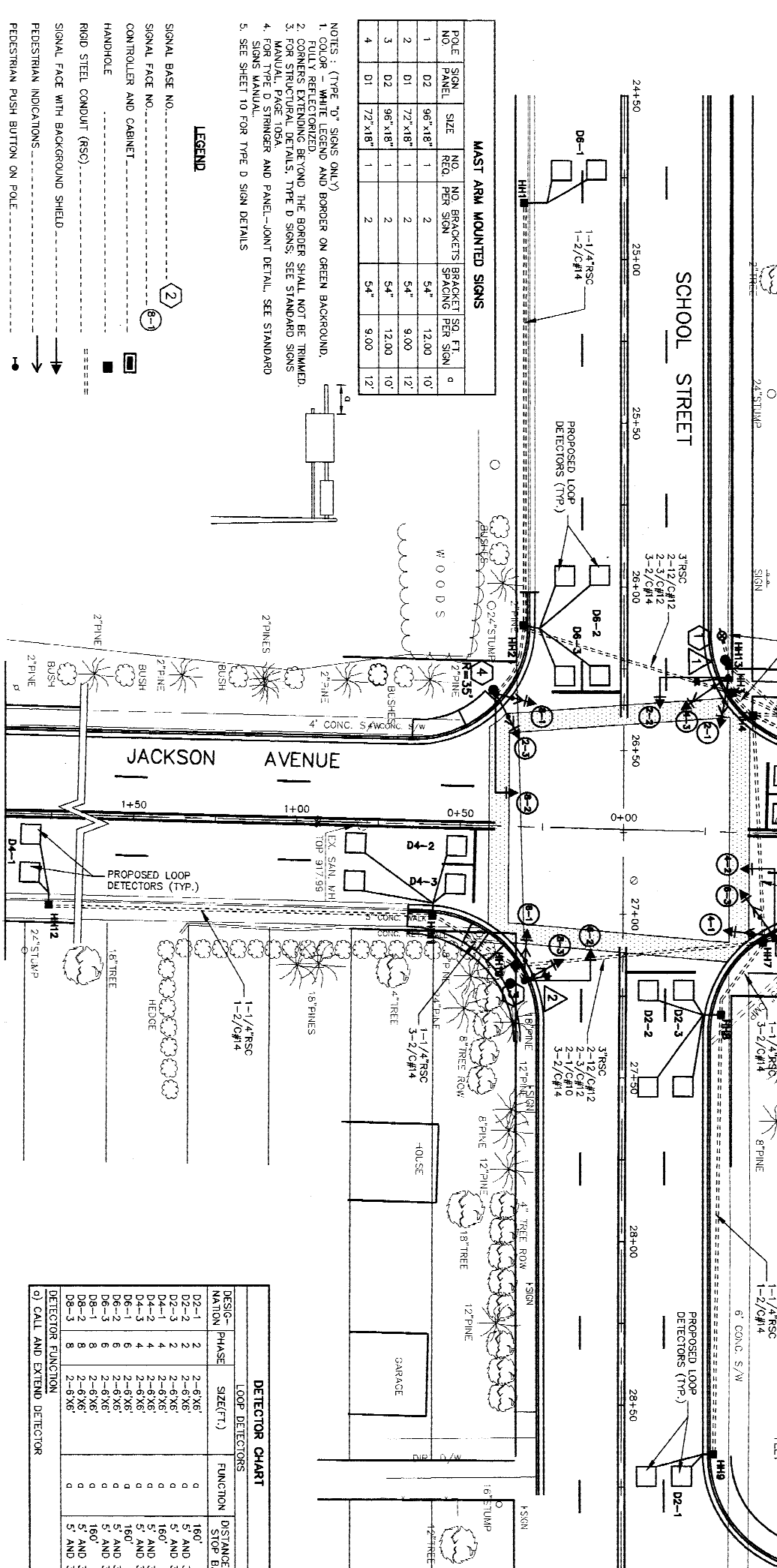
SHEET **10**

SHEETS **12**



CONTROLLER PHASING, PEDESTRIAN INDICATIONS & PUSH BUTTON LAYOUT

S.O.D. - ELK RIVER ELECTRIC  
 2" RSC RISER WITH WEATHERHEAD  
 EXTEND INTO HH#3:  
 2" RSC  
 3-1/C #2  
 2" RSC  
 2-1/C#10  
 1-1/4" RSC  
 3-2/C#14



**MAST ARM MOUNTED SIGNS**

POLE NO.	SIGN PANEL	SIZE	NO. BRACKETS	BRACKET SPACING	SG. FT.	Q
1	D1	96" x 18"	1	54"	12.00	10'
2	D1	72" x 18"	1	54"	9.00	12'
3	D2	96" x 18"	1	54"	12.00	10'
4	D1	72" x 18"	1	54"	9.00	12'

- NOTES: (TYPE "D" SIGNS ONLY)
- 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.
  - FOR TYPE "D" SIGNS, SEE STANDARD SIGNS.
  - SEE SHEET 10 FOR TYPE D SIGN DETAILS.

**LEGEND**

- SIGNAL BASE NO.
- SIGNAL FACE NO.
- CONTROLLER AND CABINET
- HANDHOLE
- RIGID STEEL CONDUIT (RSC)
- SIGNAL FACE WITH BACKGROUND SHIELD
- PEDESTRIAN INDICATIONS
- PEDESTRIAN PUSH BUTTON ON POLE
- TRAFFIC SIGNAL POLE AND MAST ARM
- MAST ARM AND LUMINAIRE
- SOURCE OF POWER
- PEDESTRIAN CROSSING STRIPING

**SIGNAL INDICATION CHART**

FACE	PHASE	TYPE AND SIZE IN INCHES			
		R	Y	G	S
2-1	2	12	12	12	-
2-2	2	12	12	12	-
2-3	2	12	12	12	-
4-1	4	12	12	12	-
4-2	4	12	12	12	-
4-3	4	12	12	12	-
6-1	6	12	12	12	-
6-2	6	12	12	12	-
6-3	6	12	12	12	-
8-1	8	12	12	12	-
8-2	8	12	12	12	-
8-3	8	12	12	12	-

NOTE: SYSTEM SHALL FLASH ALL RED.

**DETECTOR CHART**

DESIGNATION	LOOP DETECTORS	FUNCTION	DISTANCE FROM STOP BAR
D2-1	2-6' X 6'	Q	160'
D2-2	2-6' X 6'	Q	5' AND 35'
D2-3	2-6' X 6'	Q	160'
D4-1	2-6' X 6'	Q	5' AND 35'
D4-2	2-6' X 6'	Q	160'
D4-3	2-6' X 6'	Q	5' AND 35'
D6-1	2-6' X 6'	Q	160'
D6-2	2-6' X 6'	Q	5' AND 35'
D6-3	2-6' X 6'	Q	160'
D8-1	2-6' X 6'	Q	5' AND 35'
D8-2	2-6' X 6'	Q	160'
D8-3	2-6' X 6'	Q	5' AND 35'

Q) CALL AND EXTEND DETECTOR

- 1) TYPE PA90-A-20-D30-9  
 1-TYPE WAY SIGNAL (OVERHEAD), END MOUNTED  
 2-TYPE 108-POLE MOUNTED AT 0' AND 270'  
 LUMINAIRE AT 355'-200 WATT HPS W/PEC/CH/SW  
 2-PEDESTRIAN PUSH BUTTONS W/2-PEDESTRIAN INSTRUCTION SIGNS (R10-4C)  
 EXTEND INTO HH#3:  
 3" RSC  
 2-1/C#12  
 2-1/C#10  
 2-1/C#10  
 30.91N  
 52.81W
- 2) TYPE PA90-A-20-D30-9  
 1-TYPE WAY SIGNAL (OVERHEAD), END MOUNTED  
 2-TYPE 108-POLE MOUNTED AT 0' AND 270'  
 LUMINAIRE AT 355'-200 WATT HPS W/PEC/CH/SW  
 2-PEDESTRIAN PUSH BUTTONS W/2-PEDESTRIAN INSTRUCTION SIGNS (R10-4C)  
 EXTEND INTO HH#7:  
 3" RSC  
 2-1/C#12  
 2-1/C#10  
 49.31N  
 51.41E
- 3) TYPE PA90-A-20-D30-9  
 1-TYPE WAY SIGNAL (OVERHEAD), END MOUNTED  
 2-TYPE 108-POLE MOUNTED AT 0' AND 270'  
 LUMINAIRE AT 355'-200 WATT HPS W/PEC/CH/SW  
 2-PEDESTRIAN PUSH BUTTONS W/2-PEDESTRIAN INSTRUCTION SIGNS (R10-4C)  
 EXTEND INTO HH#2:  
 3" RSC  
 2-1/C#12  
 2-1/C#10  
 34.65S  
 48E
- 4) TYPE PA90-A-30  
 1-TYPE WAY SIGNAL (OVERHEAD), END MOUNTED  
 2-TYPE 108-POLE MOUNTED AT 0' AND 270'  
 LUMINAIRE AT 355'-200 WATT HPS W/PEC/CH/SW  
 2-PEDESTRIAN PUSH BUTTONS W/2-PEDESTRIAN INSTRUCTION SIGNS (R10-4C)  
 EXTEND INTO HH#4:  
 3" RSC  
 2-1/C#12  
 2-1/C#10  
 40S  
 41.6W

- 1) EQUIPMENT PAD (SEE DETAIL)  
 CONTROLLER AND CABINET (SEE DETAIL)  
 EXTEND INTO HH#3:  
 4" RSC 4-1/2/C#12 4-3/C#12 3-2/C#14  
 2-TYPE 108-POLE MOUNTED AT 0' AND 270'  
 LUMINAIRE AT 355'-200 WATT HPS W/PEC/CH/SW  
 2-PEDESTRIAN PUSH BUTTONS W/2-PEDESTRIAN INSTRUCTION SIGNS (R10-4C)  
 EXTEND INTO HH#2:  
 3" RSC  
 2-1/C#12  
 2-1/C#10  
 40S  
 41.6W

- NOTES:
- SEE SPECIAL PROVISIONS FOR OWNER FURNISHED EQUIPMENT
  - PEDESTRIAN INDICATIONS SHALL BE 12" X 12"
  - ALL SIGNAL FACES SHALL BE 12"-3 SECTION R-Y-G. ALL SIGNAL FACES SHALL HAVE BACKGROUND SHIELDS.
  - ALL HANDHOLES SHALL BE PVC HANDHOLES WITH TYPE C COVERS. EXCEPT ALL HANDHOLES LOCATED IN SIDEWALKS, MEDIANS OR OTHER PAVED SURFACES SHALL HAVE TYPE LD COVERS.
  - EACH LUMINAIRE SHALL HAVE A PHOTO-ELECTRIC CELL AND CHECK SWITCH.
  - SEE DETAIL SHEET FOR MAST ARM MOUNTED SIGNS.

**FOR INFORMATION ONLY**

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT 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 4/17/94 REG. NO. 2184

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT 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 4/18/94 REG. NO. 2184



1328 ENERGY PARK DRIVE  
 ST. PAUL, MINNESOTA 55104  
 (612) 644-1388

REVISIONS

NO.	DATE	DESCRIPTION	DESIGNED	CHECKED	DATE
1	4/13/94	AMBIT COMMENTS	ECW	ECW	

DESIGNED: GMS  
 CHECKED: ECW  
 DRAWN: ECW  
 GRAPHIC SCALE: 0 HORIZ, 5 VERT.

RECORD PLAN 1995  
 CITY OF ELK RIVER  
 INTERSECTION LAYOUT  
 SCHOOL STREET AND JACKSON AVENUE  
 S.A.P. 204-104-04 M.B. 204-07-04  
 DATE APRIL 1994 SHEET 59 OF 74 SHEETS PROJECT NO. 230-216-20

**CITY OF ELK RIVER**  
**JACKSON AVENUE AND SCHOOL STREET**  
**INTERSECTION IMPROVEMENTS**  
**AS BUILT SIGNAL LAYOUT**

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 Print Name: EDWARD F. TERHAAR  
 Signature: *Edward F. Terhaar*  
 Date: 05-29-07 License # 24441

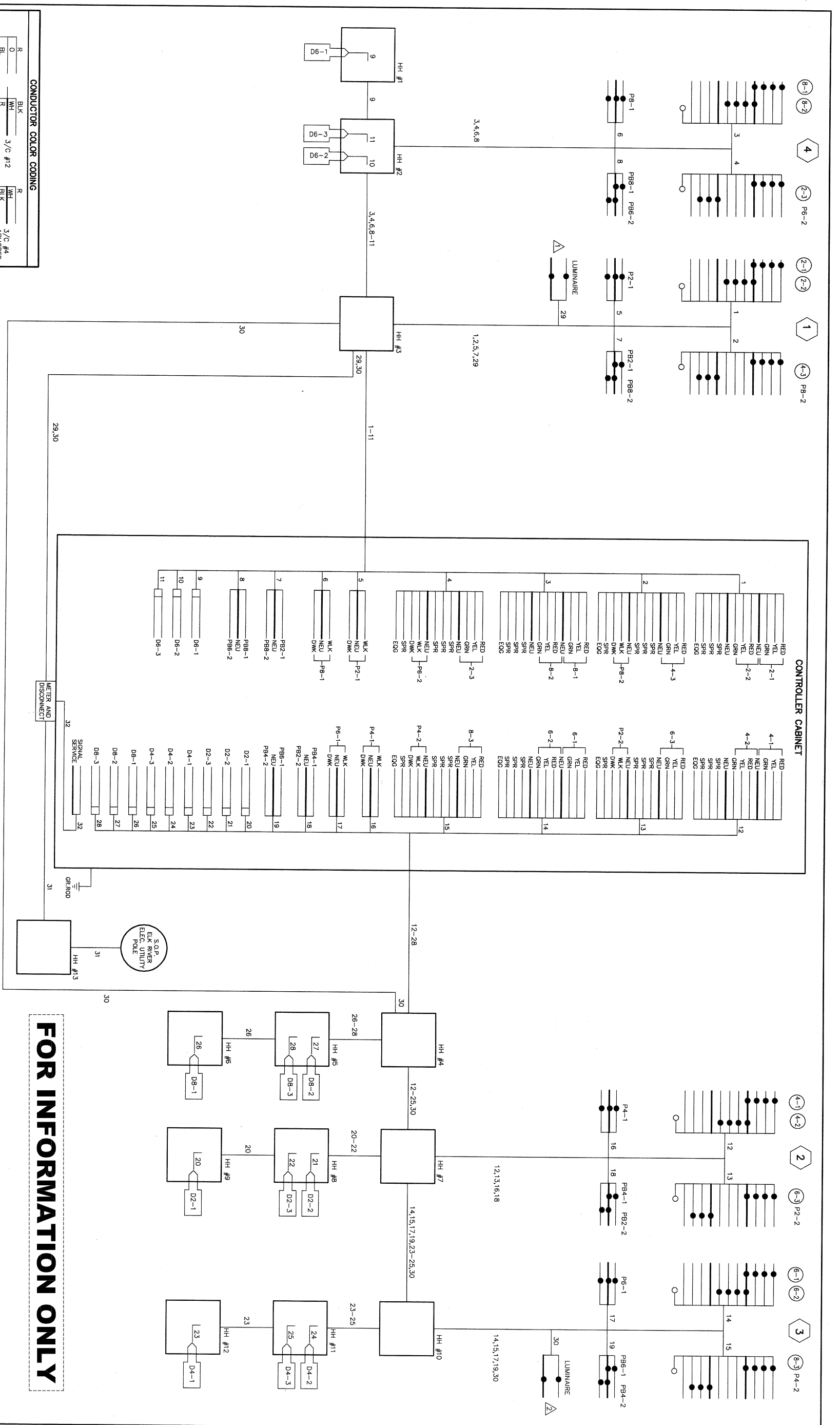
REVISIONS			
NO.	DATE	BY	DESCRIPTION

DRAWN BY: EFT  
 CHECKED BY: EFT  
 DESIGNED BY: EFT  
 JOB NO. 226073

**Wenck**  
 Consulting Engineers  
 1700 West 24th Street  
 Minneapolis, MN 55405  
 (763) 429-3000

SHEET 11 SHEETS 12





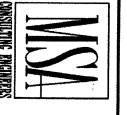
**CONDUCTOR COLOR CODING**

R	BLK	R	3/C #4
O	WH	WH	BLK ARMORED
BL	R	BLK	SHIELD
R/BLK	CLR	BLK	CABLE
O/BLK	BLK	2-1/C #8	
BL/BLK	WH	2-1/C #8	
WH/BLK	R	2-1/C #10	
BLK/WH			
G/BLK			
G			

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

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

DATE: 4/18/94 REG. NO. 0875



1326 EMERY PARK DRIVE  
ST PAUL, MINNESOTA 55108  
(612) 844-4389

9800 SHELBO PARKWAY  
MINNEAPOLIS, MINNESOTA 55424  
(612) 546-0432

REVISIONS	DATE	DESCRIPTION

DESIGNED GMS	CHECKED GMS
DRAWN EFT	GRAPHIC SCALE
0	HORIZ. NONE
	VERT.

RECORD PLAN 1995

CITY OF ELK RIVER  
FIELD WIRING DIAGRAM  
S.A.P. 204-104-04 M.T.B. 204-107-04  
SHEET 60 OF 74 SHEETS PROJECT NO. 230-216

**FOR INFORMATION ONLY**

**CITY OF ELK RIVER  
JACKSON AVENUE AND SCHOOL STREET  
INTERSECTION IMPROVEMENTS  
AS BUILT SIGNAL WIRING DIAGRAM**

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

Print Name: EDWARD F. TERHAAR

Signature: *Edward F. Terhaar*

Date: 05-29-07 License # 24441

REVISIONS			
NO.	DATE	BY	DESCRIPTION



DRAWN BY: EFT  
CHECKED BY: EFT  
DESIGNED BY: EFT  
JOB NO. 226073