

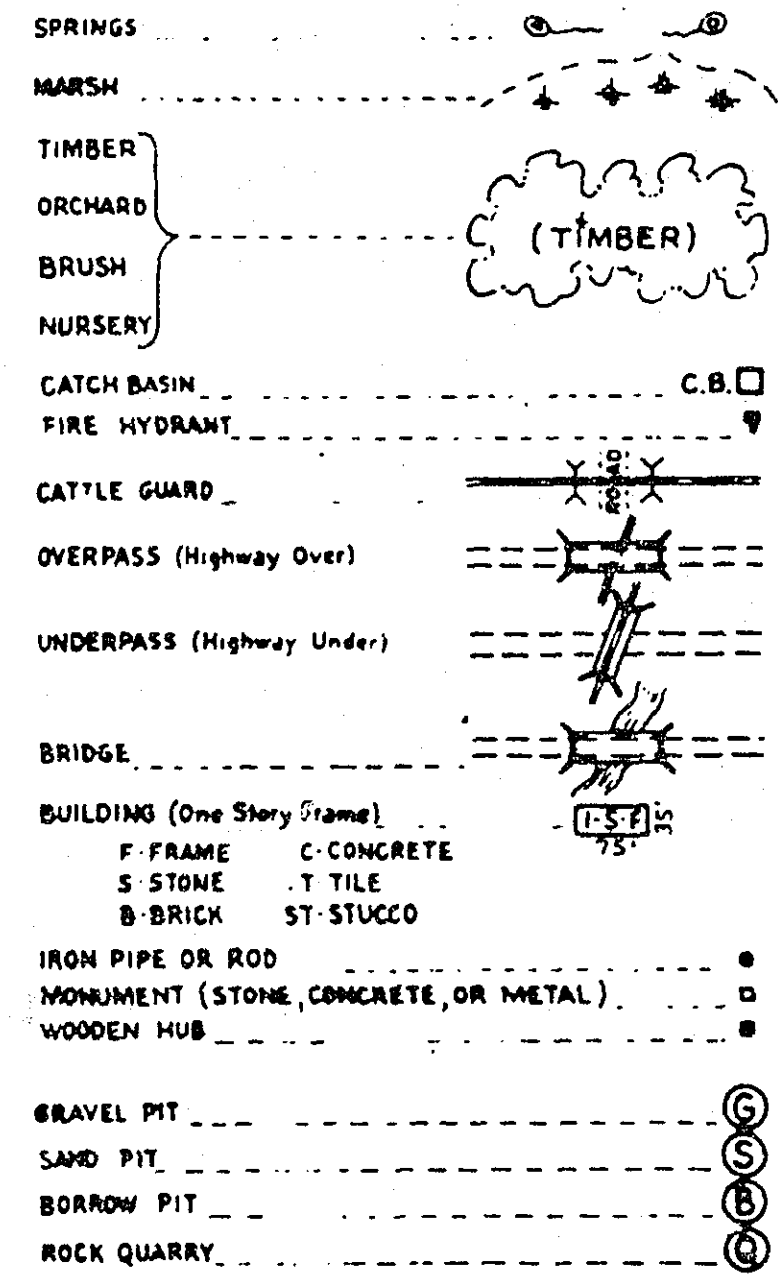
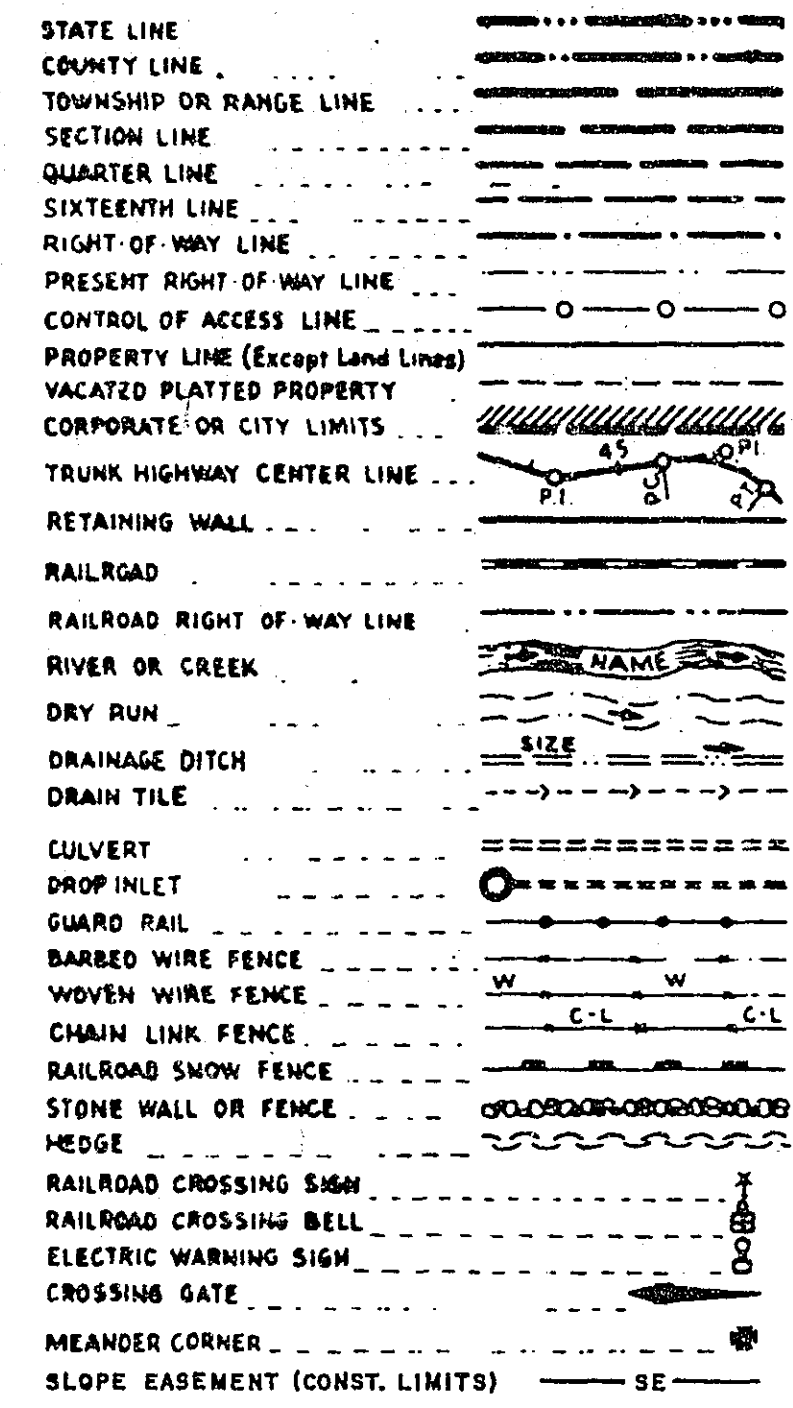
DRAWING NUMBER

23-138

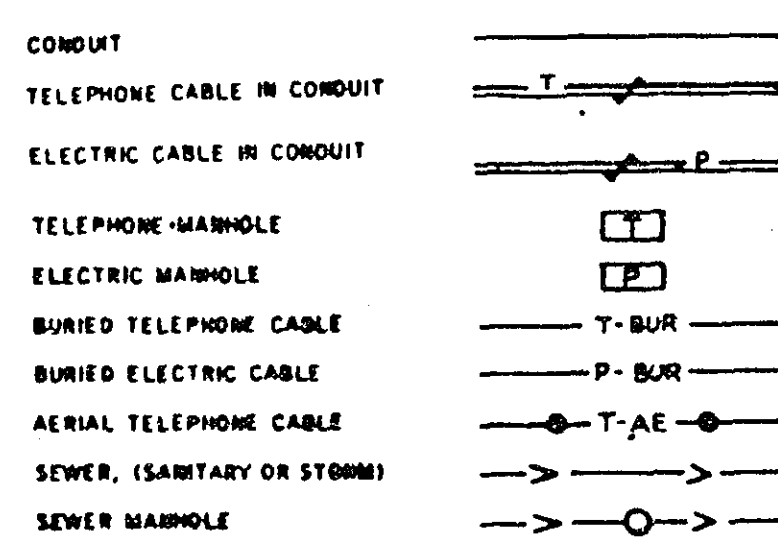
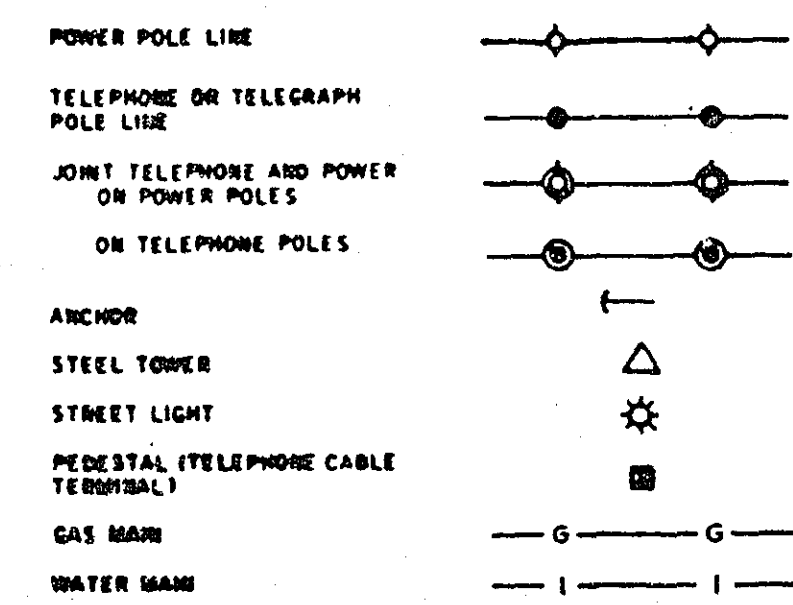
DRAWING NUMBER

DRAWING NUMBER

PLANS SYMBOLS



UTILITIES SYMBOLS



PIT DATA

PIT NO. _____ Located in _____
PIT NO. _____ Located in _____

GOVERNING SPECIFICATION
THE 1983 EDITION OF THE MINNESOTA DEPARTMENT
OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR
CONSTRUCTION" SHALL GOVERN.

RAMSEY COUNTY
DEPARTMENT OF PUBLIC WORKS

CONSTRUCTION PLAN FOR TRAFFIC CONTROL SIGNAL SYSTEM AT
COUNTY ROAD C & WEST SNELLING SERVICE DR.

CO. PROJ. NO. TRF-560



COUNTY RD. C & WEST SNELLING SERVICE DR.
CO. PROJ. NO. TRF-560

INDEX

SHEET NO.	DESCRIPTION
1	TITLE
2	DETAILS & QUANTITIES
3	INTERSECTION LAYOUT
4	FIELD WIRING DIAGRAM
5-6	INFORMATION

DESIGN SQUAD Rubbe DATE 3/3/87
DRAWN BY _____ DATE _____
CHECKED BY _____ DATE _____
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 3/17/87 REG. NO. 12703 ENGR. Paul Hill

RECOMMENDED FOR APPROVAL DES DATE 3/16/87 RECOMMENDED FOR APPROVAL County Engineer DATE 3/10/87
RECOMMENDED FOR APPROVAL DES DATE 3/12/87 APPROVED Chairman DATE _____
RECOMMENDED FOR APPROVAL DES DATE 3/10/87 APPROVED Charles V. Handell DATE 3-18-87
RECOMMENDED FOR APPROVAL DES DATE 3-9-87 APPROVED _____ DATE _____
RECOMMENDED FOR APPROVAL DES DATE 3-9-87 APPROVED _____ DATE _____
RECOMMENDED FOR APPROVAL DES DATE 3-10-87 APPROVED _____ DATE _____
APPROVED DES DATE 3-10-87

PLAN REVISIONS		
DATE	SHEET NO.	BY
3/10/87	No. 3 - RELOCATE PAUL N.W. COR.	RW

CO. PROJ. NO. TRF-560

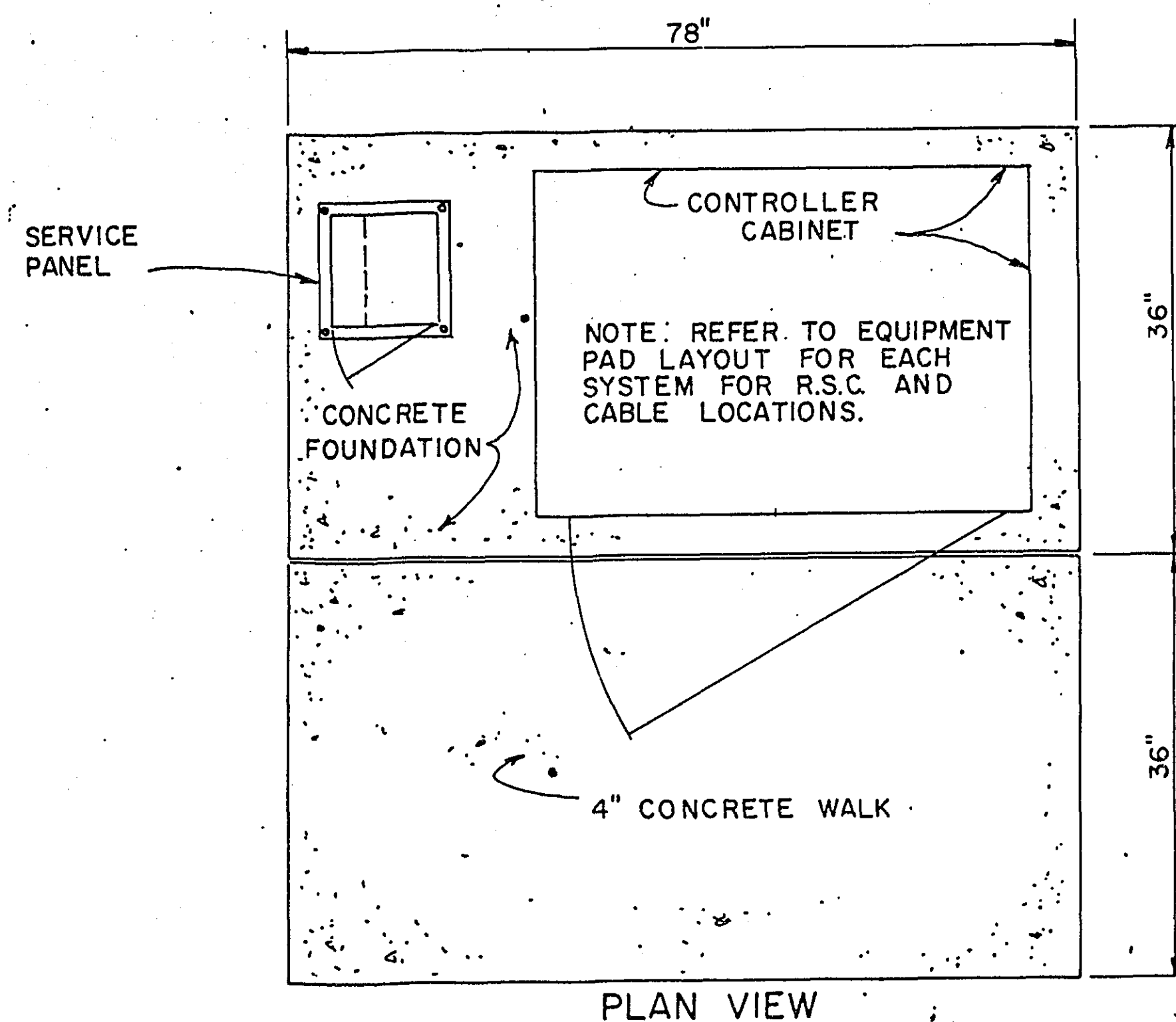
Sheet No. 1 of 6 Sheets

23-138

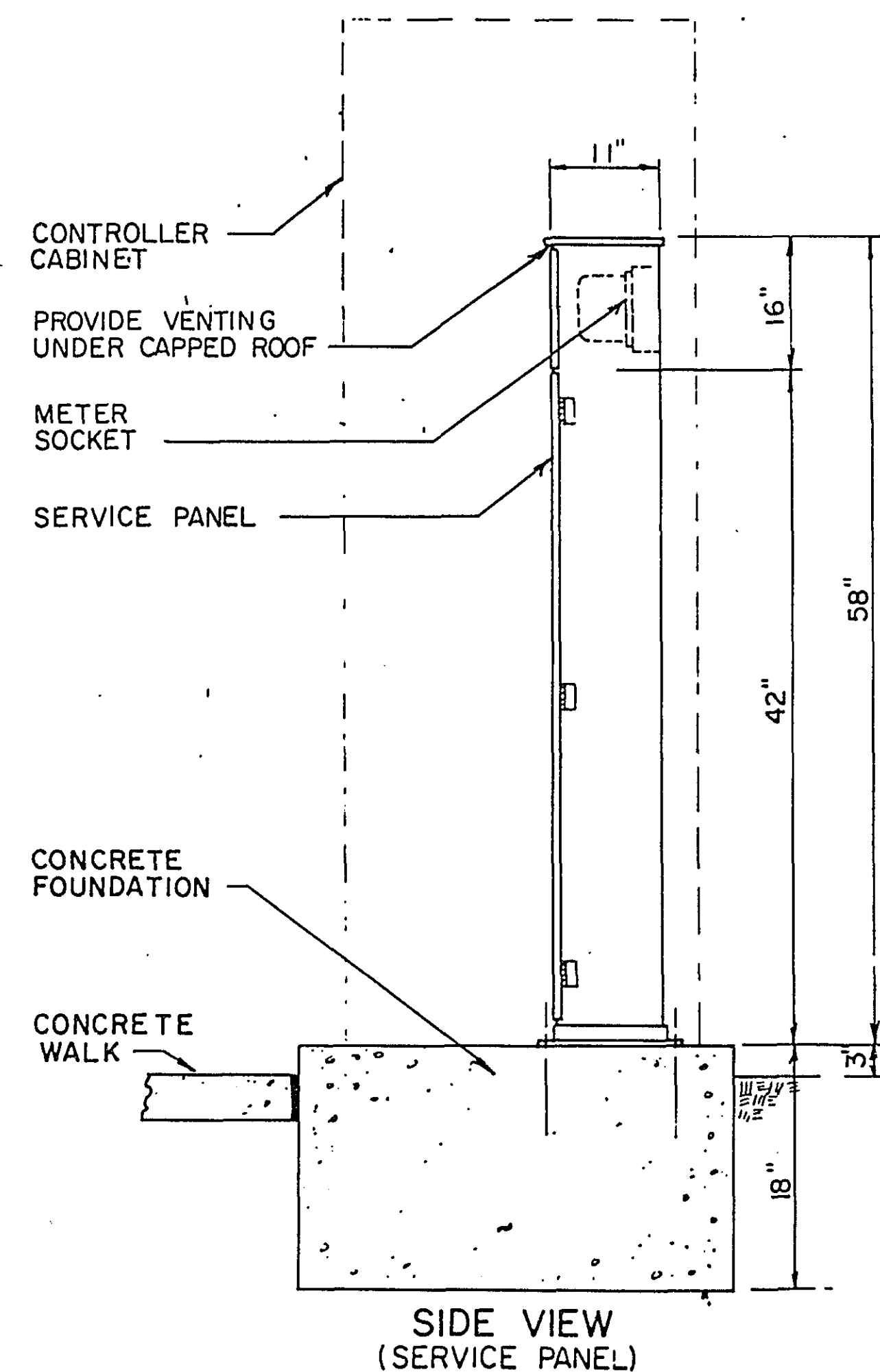
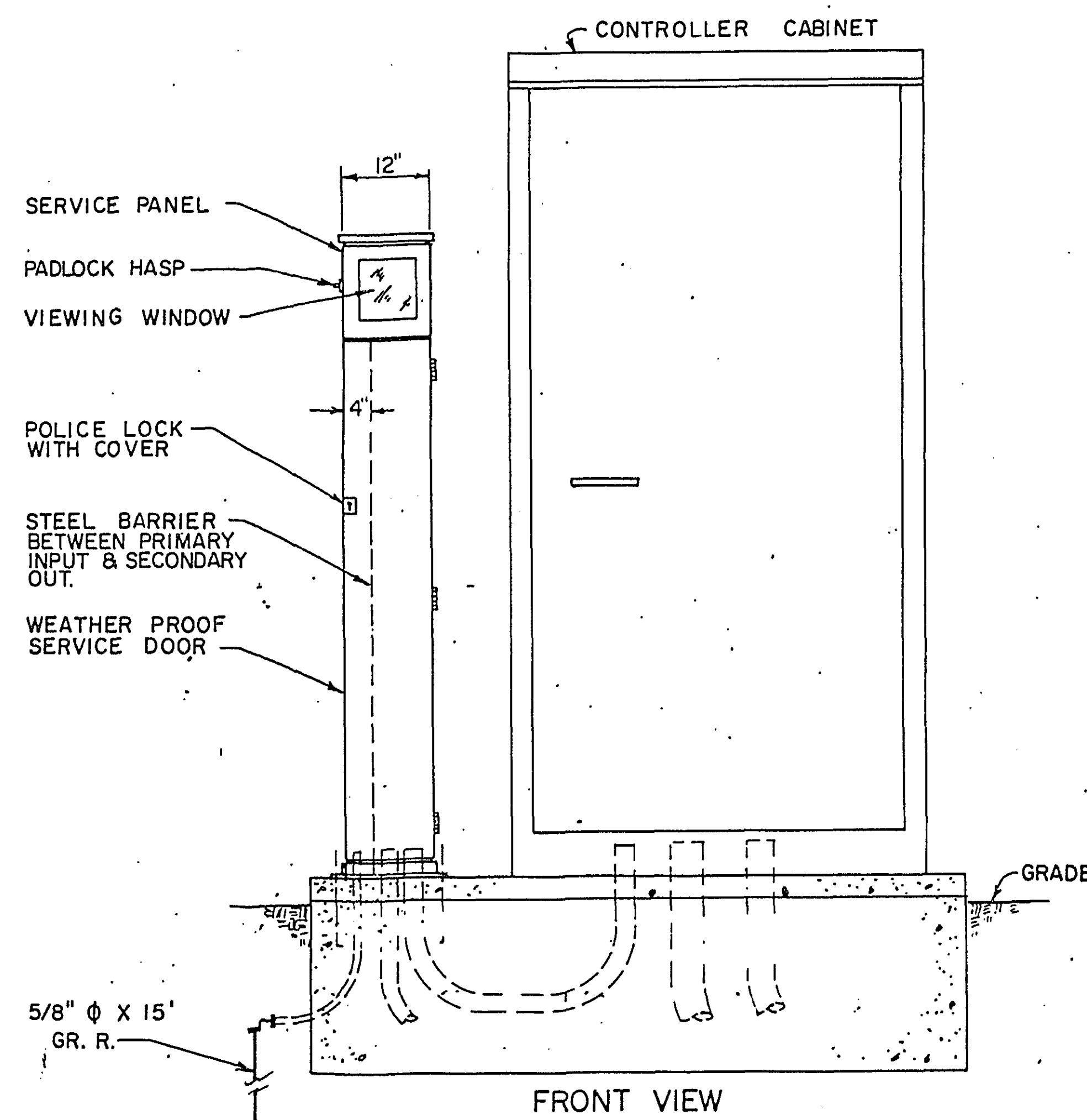
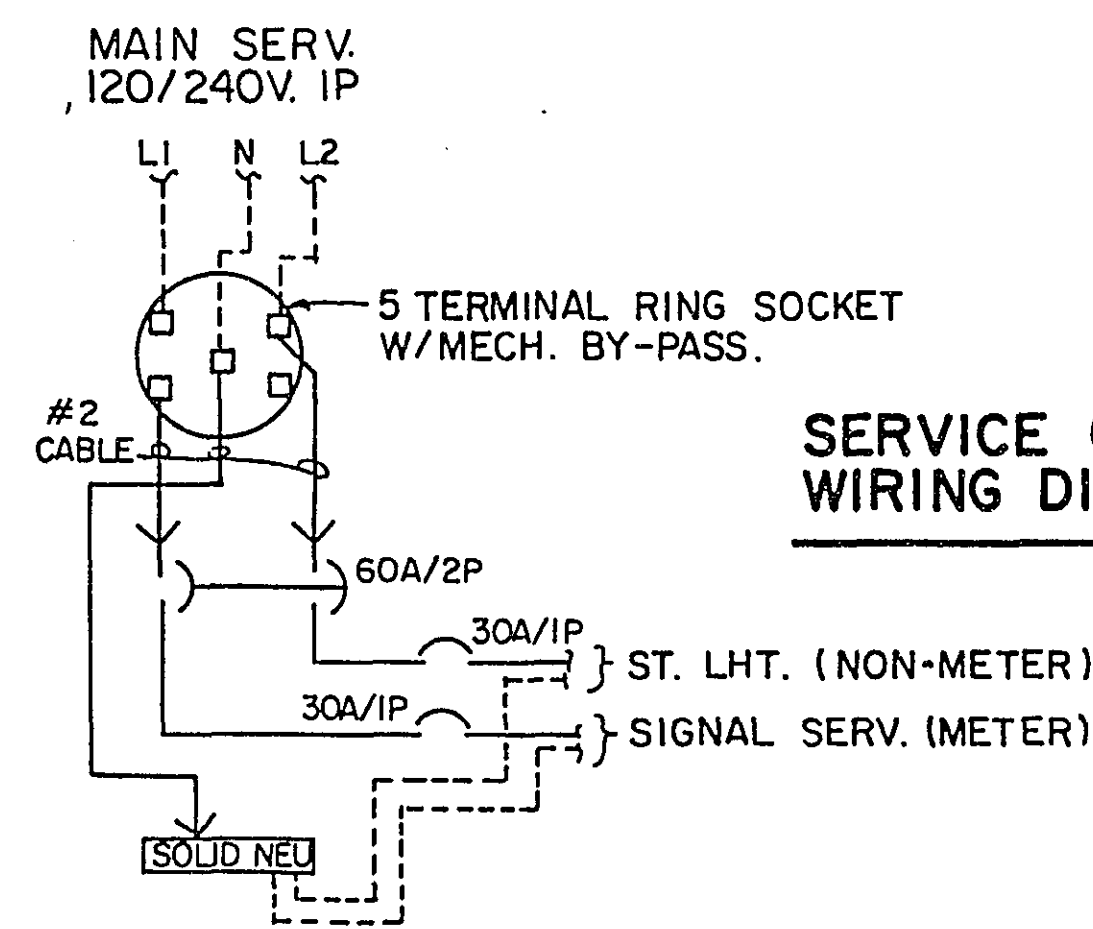
23-138 Co Rd C & West Snelling Service Dr
Co Proj No Trf 560

1-6

24X

EQUIPMENT PAD DETAILS
(TYPE X)

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) CONDUIT 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. (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.



ABBREVIATIONS

YEL	- YELLOW
GRN	- GREEN
W/LK	- WALK
NEU	- NEUTRAL
DMK	- DON'T WALK
LUM	- LUMINAIRE
DNL	- DOWNLIGHT
SW	- SWITCH
SWD	- SWITCHED
CH.SW.	- CHECK SWITCH
H.H.	- HANDHOLE
J.B.	- JUNCTION BOX
GR.R.	- GROUND ROD
SERV.	- SERVICE
SP	- SPLICE
THA	- THRU ARROW
LTA	- LEFT TURN ARROW
RTA	- RIGHT TURN ARROW
TRA	- THRU AND RIGHT ARROW
RTHA (EG)	- THRU ARROW - RED
GLTA (EG)	- LEFT TURN ARROW - GREEN
YRTA (EG)	- RIGHT TURN ARROW - YELLOW
PI-1 (EG)	- PEDESTRIAN INDICATIONS - PHASE "1"
PB2-2 (EG)	- PUSH BUTTON - PHASE "2"
3-2 (EG)	- SIGNAL HEADS - PHASE "3"
DI-2	- DETECTOR - PHASE "1"
P.E.C.	- PHOTOELECTRIC CELL
ST.LHT.	- STREET LIGHT
S.O.P.	- SOURCE OF POWER
EGG	- EQUIPMENT GROUND
SPR	- SPARE CONDUCTORS
R.S.C.	- RIGID STEEL CONDUIT
N.M.C.	- NON METALLIC CONDUIT
E.V.P.	- EMERGENCY VEHICLE PRE-EMPTION
EGG CONNECTION	- EGG CONNECTION
TDW	- TELEPHONE DROP WIRE
F&I	- FURNISH AND INSTALL
R&S	- REMOVE AND SALVAGE
FL	- FLASH/FLASHING
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
CLR.	- CLEAR
BR.GR.	- BARE GROUND

H.P.S.	- HIGH PRESSURE SODIUM
3	- E.V.P. DETECTOR DIRECTION
1-1	- SIGNAL BASE NO.
Δ	- SIGNAL FACE NO.
	- LUMINAIRE NO.

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 3/17/87 REG. NO. 12103

STANDARD PLATES

THE FOLLOWING STANDARD PLATES, APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION, SHALL APPLY ON THIS PROJECT.

PLATE NO.	DESCRIPTION
*0004 A	SPECIFICATION REFERENCE TO STANDARD PLATES
*8110 C	TRAFFIC SIGNAL BRACKETING (POLE MOUNTED)
*8111 B	TRAFFIC SIGNAL BRACKETING (PEDESTAL MOUNTED)
*8112 C	PEDESTAL FOUNDATION
*8113 C	MAGNETIC VEHICLE DETECTOR INSTALLATION
*8115 C	PEDESTRIAN PUSH BUTTON INSTALLATION
*8116 C	STEEL GUARD POST
*8117 F	PRECAST CONCRETE HANDHOLE
*8118 C	SERVICE EQUIPMENT & POLE, TRAFFIC CONTROL SIGNALS
*8119 C	GROUND MOUNTED CABINET FOUNDATION
*8120 H	POLE FOUNDATION (P-80 & P-90)
*8121 B	TRANSFORMER BASE WITH POLE BASE PLATE
*8222 C	PEDESTAL AND PEDESTAL BASE
*8123 B	POLE AND MAST ARM (LUMINAIRE AND TRAFFIC LIGHTS)
*8124 D	MAST ARM SIGNAL HEAD MOUNTS
*8126 C	P-100 POLE FOUNDATION
*8130 D	SAW CUT LOOP DETECTORS

* STANDARD PLATES APPLICABLE TO THIS PROJECT.

STATEMENT OF ESTIMATED QUANTITIES

ITEM NO.	ITEM	UNIT	QUANTITY
2565.511	FULL T. ACT. T. CONTROL SIG. SYS.	SIG.SYS.	1
0565.604	EMERGENCY VEHICLE PRE-EMPTION SYS.	SYS.	1

ESTIMATED QUANTITIES
& DETAILS

CO. PROJ. NO. TRF 560

SHEET NO. 2 OF 6 SHEETS

23-138

23-138 to Rd C + West Snelling Service Dr
Co Proj No Trf 560

1-6

24X

LEGEND OF SYMBOLS	
SIGNAL BASE NO.	5
SIGNAL FACE	13
CONTROLLER AND CABINET	
CONTROLLER AND CABINET-INPLACE	
HANDHOLE	
HANDHOLE-INPLACE	
RIGID STEEL CONDUIT (R.S.C.)	
RIGID STEEL CONDUIT (R.S.C.)-INPLACE	
SIGNAL FACE	
SIGNAL FACE WITH BACKGROUND SHIELD	
PEDESTRIAN INDICATIONS	
PEDESTRIAN INDICATIONS-INPLACE	
PEDESTRIAN PUSH BUTTON ON PEDESTAL OR POLE	
PEDESTRIAN PUSH BUTTON STATION	
TRAFFIC SIGNAL PEDESTAL	
TRAFFIC SIGNAL PEDESTAL-INPLACE	
TRAFFIC SIGNAL POLE AND MAST ARM	
TRAFFIC SIGNAL POLE AND MAST ARM-INPLACE	
MAST ARM AND LUMINAIRE	
MAST ARM AND LUMINAIRE-INPLACE	
WOOD POLE	
WOOD POLE-INPLACE	
SOURCE OF POWER	
EMERGENCY VEHICLE PRE-EMPTION DETECTOR LOCATION	

LOOP DETECTORS			
NUMBER	SIZE	FUNCTION	LOCATION
D2-1	6' x 6'	C & E	255
D2-2	6' x 6'	C & E	255
D4-1	2-6' x 6'	C & E	145
D4-2	2-6' x 6'	C & E	75
D4-3	2-6' x 20'	C & E TD	2
D6-1	6' x 6'	C & E	255
D6-2	6' x 6'	C & E	255

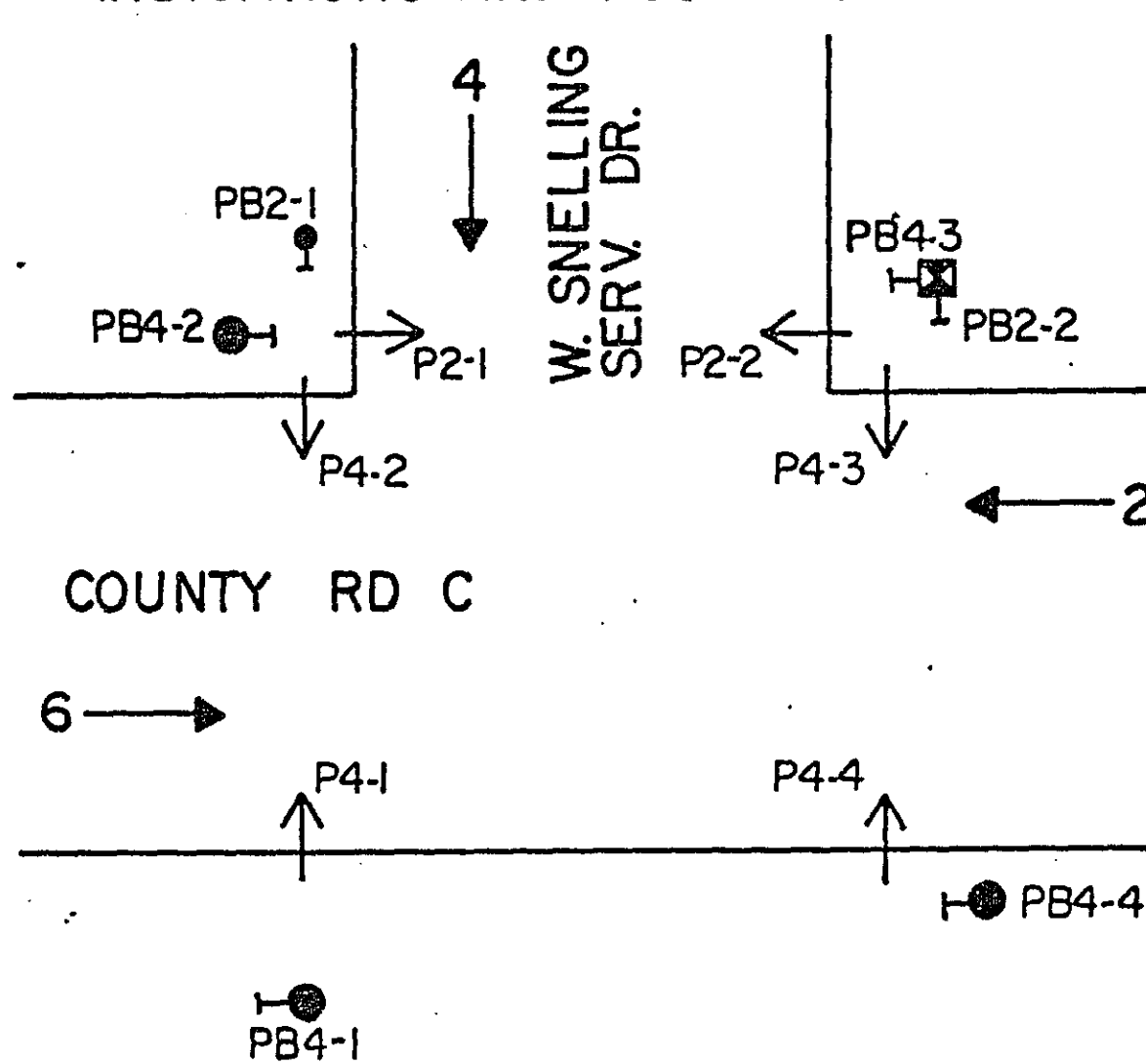
LOCATION = DISTANCE FROM STOP
LINE TO DETECTOR

C = CALL
E = EXTEND
TD = TIME DELAYED

SIGNAL INDICATION CHART				
FACE	PHASE	INDICATION SIZE		
		R	Y	G
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"

FLASH MODE = ALL RED

CONTROLLER PHASING, PEDESTRIAN
INDICATIONS AND PUSH BUTTONS



EQUIPMENT PAD - TYPE X (SEE DETAILS)
5 STEEL GUARD POSTS
SERVICE CABINET

EXTEND INTO H.H. 1
1.25" RSC
3 - 1/C #6

EXTEND INTO H.H. 8
1.25" RSC
2 - 1/C #10

EXTEND INTO H.H. 2
1.25" RSC
2 - 1/C #10

CONTROLLER CABINET
EXTEND TO SERVICE TEL. BOX
1" RSC WITH DRAIN TEE AND
2 - 2/C TELEPHONE DROP WIRE
EXTEND INTO H.H. 2

4" RSC
4 - 12/C #12
2 - 3/C #12
2 - 2/C #14

EXTEND INTO H.H. 8
4" RSC
2 - 12/C #12
1 - 3/C #12
1 - 3/C #20
5 - 2/C #14

BETWEEN SERVICE & CONTROLLER
CABINET - 1.25" RSC
2 - 1/C #6
1 - 1/C #6 (BARE)

S.O.P.
PAD MOUNTED TRANSFORMER
BY OTHERS
EXTEND INTO H.H. 1
1.25" RSC
3 - 1/C #6

PEDESTRIAN PUSH BUTTON STA (4" RSC)
1 - PEDESTRIAN PUSH BUTTON
EXTEND INTO H.H. 8
1.25" RSC
1 - 3/C #12

1.25" RSC
1 - 2/C #14

1.25" RSC
2 - 2/C #14

① P80-A-20-T40-10
LUMINAIRE - 200 WATT HPS AT 3500
ONE-WAY SIGNAL - OVERHEAD
TYPE 10C - POLE MOUNTED 2700
12" PEDESTRIAN INDICATIONS
2 X - PEDESTRIAN PUSH BUTTONS
EXTEND INTO H.H. 8
3" RSC
1 - 12/C #12
3 - 3/C #12
1 - 3/C #20
2 - 1/C #10

② TYPE 1D
12" PEDESTRIAN INDICATIONS
2 - PEDESTRIAN PUSH BUTTONS
EXTEND INTO H.H. 11
3" RSC
1 - 12/C #12
1 - 3/C #12

3" RSC
1 - 12/C #12
1 - 3/C #12
2 - 2/C #14

1.25" RSC
2 - 2/C #14

③ P80-A-20-T40-10
LUMINAIRE - 200 WATT HPS AT 3500
ONE-WAY SIGNAL - OVERHEAD
TYPE 20C - POLE MOUNTED 2700
12" PEDESTRIAN INDICATIONS
1 - PEDESTRIAN PUSH BUTTON
EXTEND INTO H.H. 7
3" RSC
2 - 12/C #12
1 - 3/C #12
2 - 1/C #10

④ P80-A-20
ONE-WAY SIGNAL - OVERHEAD
TYPE 10A - POLE MOUNTED 00
TYPE 10B - POLE MOUNTED 1800
12" PEDESTRIAN INDICATIONS
1 - PEDESTRIAN PUSH BUTTON
EXTEND INTO H.H. 4
3" RSC
2 - 12/C #12
1 - 3/C #12

ASBUILT PLAN
CONFORMING TO
CONST. RECORDS

DONE BY: JPH
DATE: 1-28-88

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: 3/17/87 REG. NO. 12703

CO. PROJ. NO. TRF 560

SHEET NO. 3 OF 6 SHEETS

NOTES:

- POLE AND DETECTOR LOCATIONS SHALL BE
VERIFIED IN THE FIELD BY THE TRAFFIC
ENGINEER PRIOR TO INSTALLATION.
- THE COUNTY SHALL FURNISH TO THE
CONTRACTOR EVP DETECTORS AND
ASSOCIATED CONTROL EQUIPMENT (SEE
SPECIAL PROVISIONS).

SCALE IN FEET
0 10 20 30 40 50 100

23-138 to Rd C & West Snelling Service Dr
G Proj No Trf 560

1-6

24-X

DRAWING NUMBER

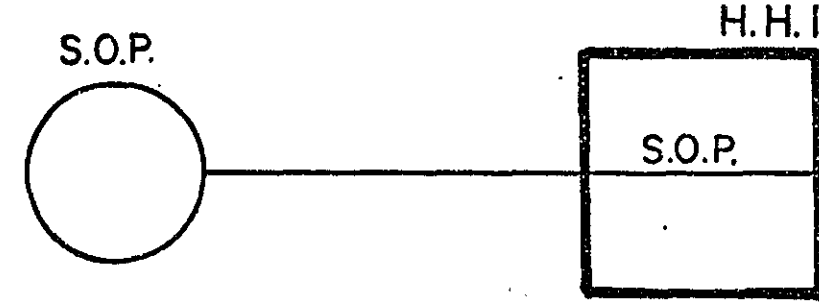
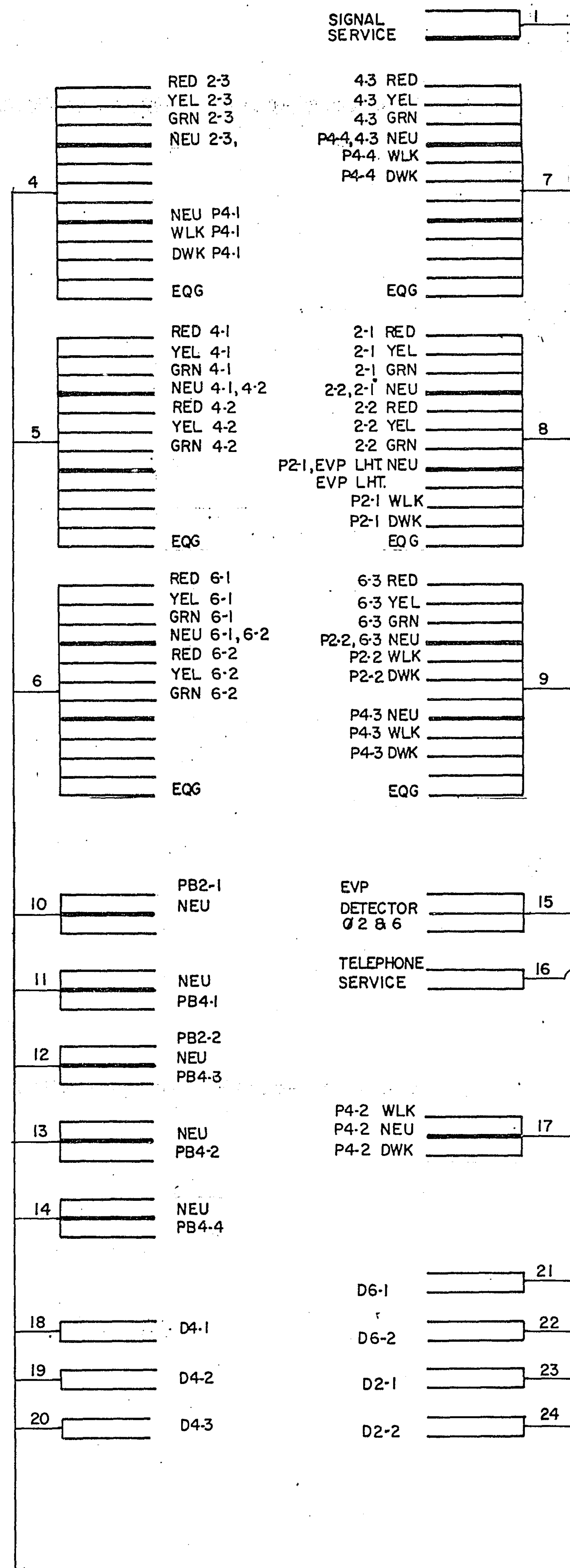
DRAWING NUMBER

DRAWING NUMBER

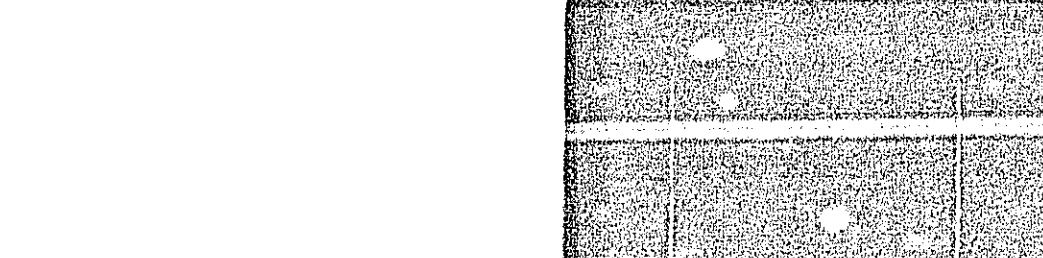
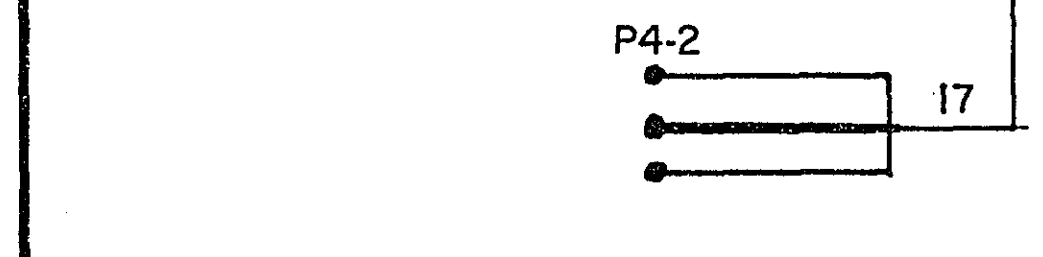
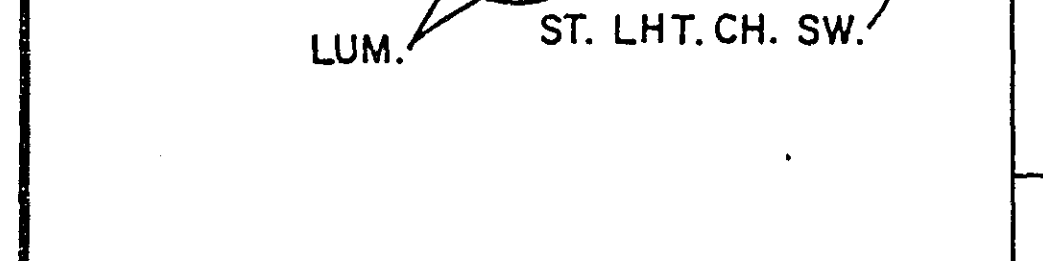
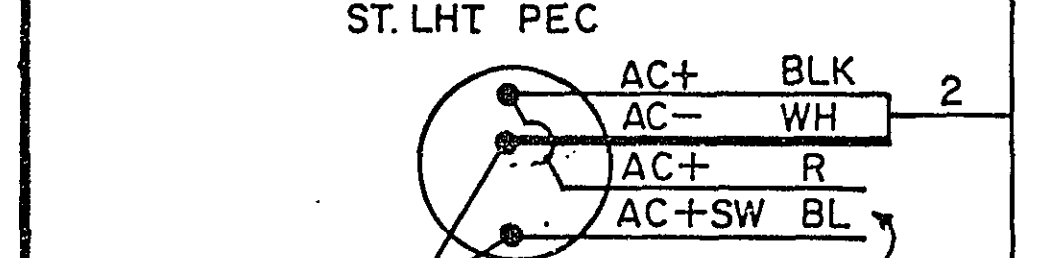
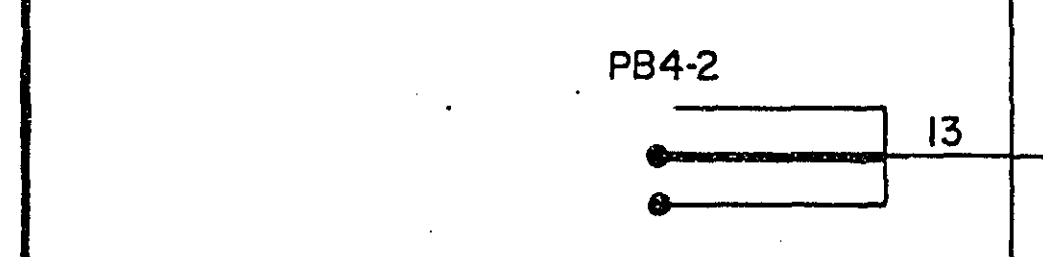
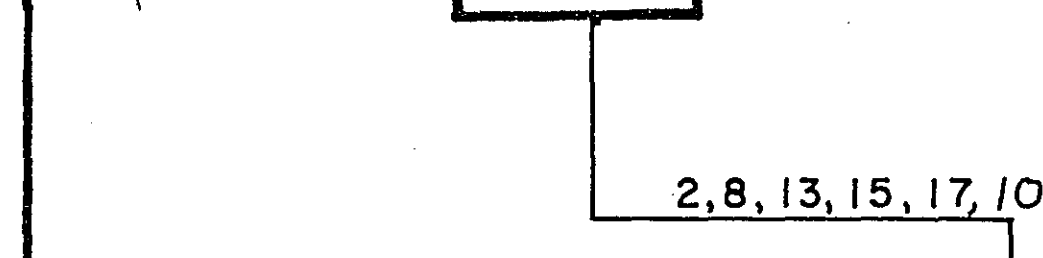
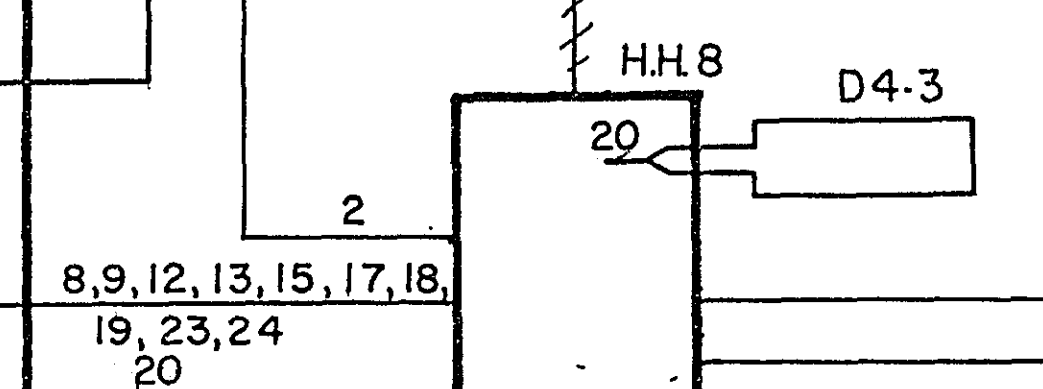
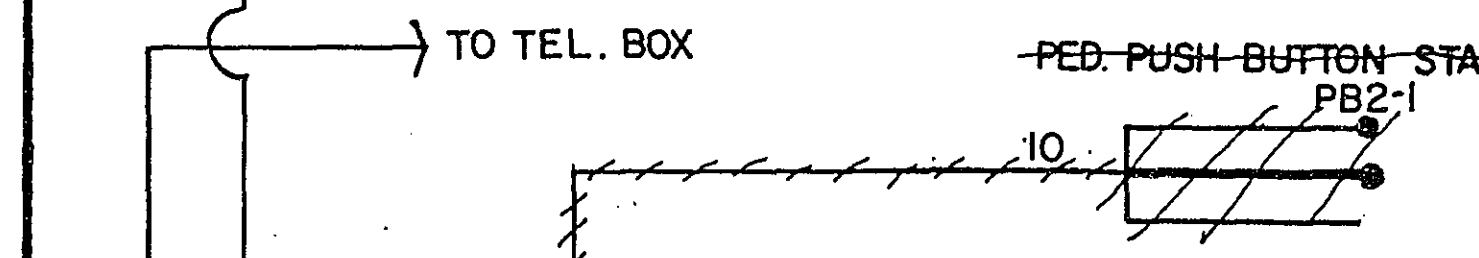
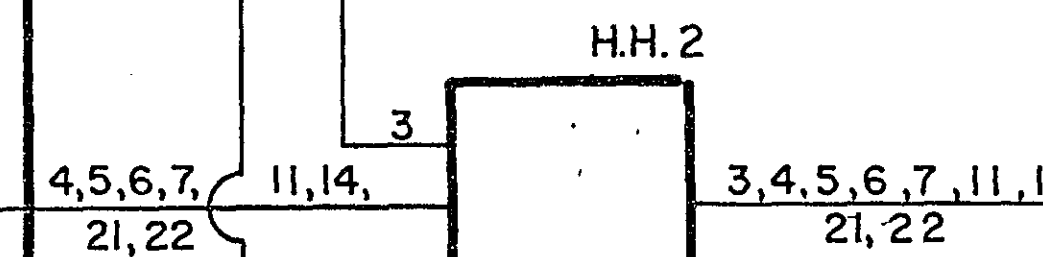
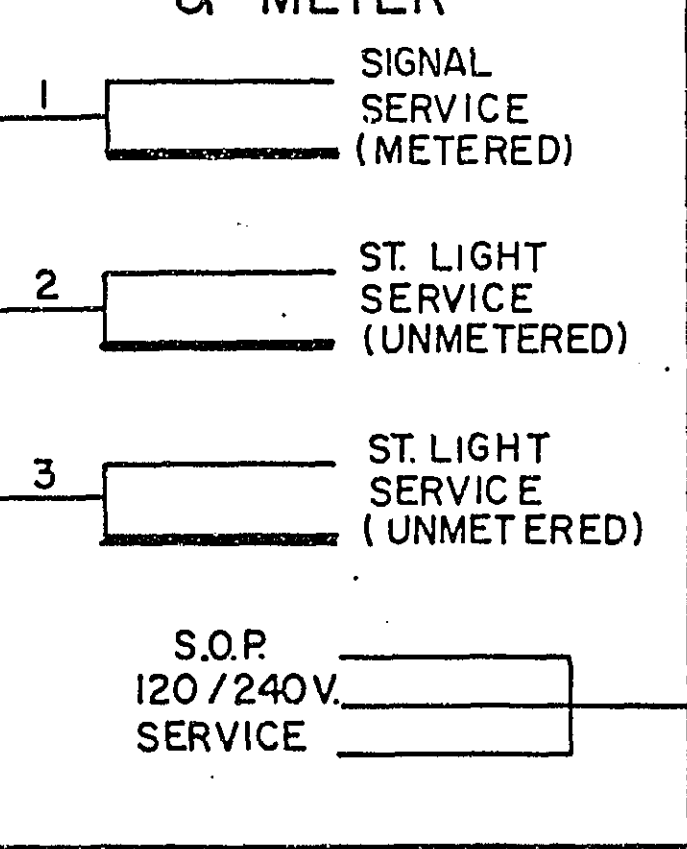
DRAWING NUMBER

RAY HOLD CORPORATION • IRVINE, CALIFORNIA
MEMBER OF THE RAY GROUPRAY HOLD CORPORATION • IRVINE, CALIFORNIA
MEMBER OF THE RAY GROUPRAY HOLD CORPORATION • IRVINE, CALIFORNIA
MEMBER OF THE RAY GROUPRAY HOLD CORPORATION • IRVINE, CALIFORNIA
MEMBER OF THE RAY GROUP

CONTROLLER CABINET



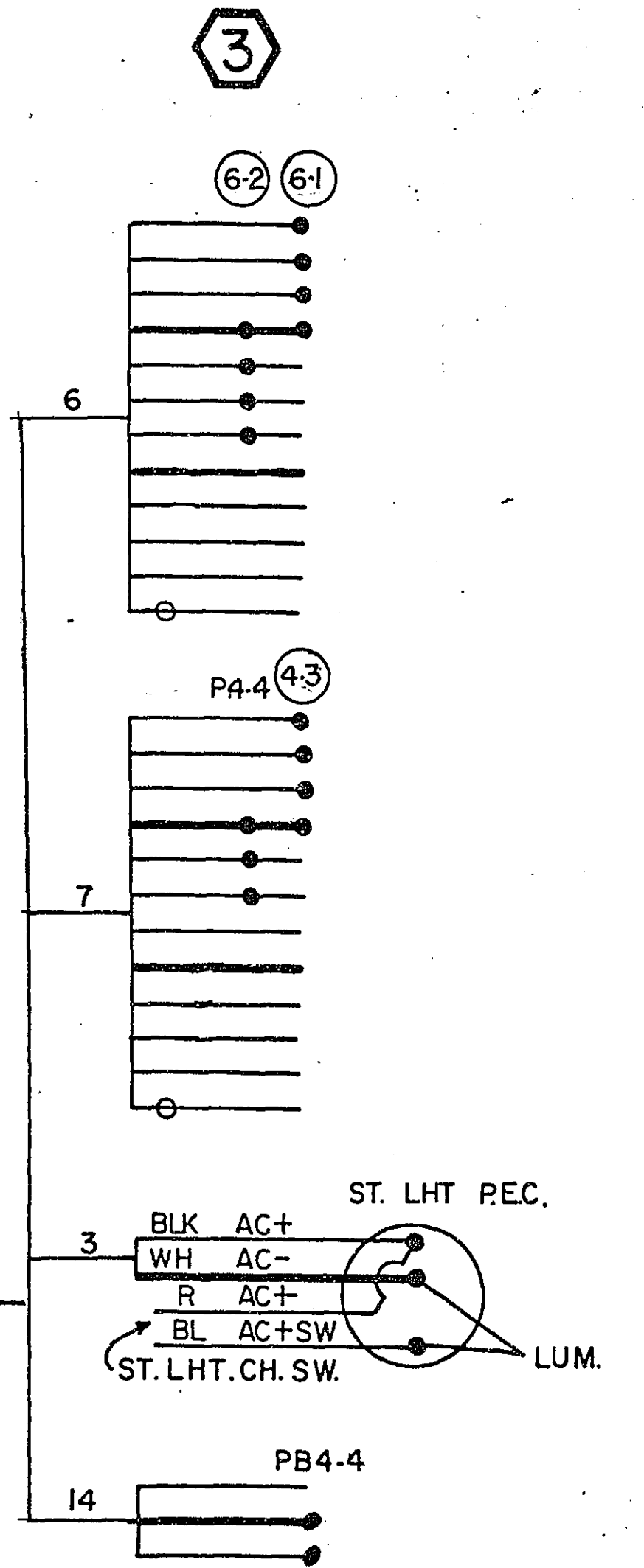
SERVICE CABINET & METER



CONDUCTOR COLOR CODING

R	BLK	2-1/C #6
O	BLK	2-1/C #10
B	R	3/C #12
WH	WH	BLK
R/BLK	BLK	2/C #14
O/BLK	BLK	R OR O
BL/BLK	WH OR YEL	3/C #20
WH/BLK	BL OR BLK	
BLK		
BLK/WH		
G/BLK		
G		

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

ASBUILT PLAN
CONFORMING TO
CONST. RECORDSDONE BY: JPH
DATE: 1-28-88I 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 3/17/87 REG NO. 12203FIELD WIRING DIAGRAM
COUNTY ROAD C & W. SNELLING SERVICE DR.

CO. PROJ. NO. TRF 560

SHEET NO 4 OF 6 SHEETS

23-138

23-138 to Rd C + West Snelling Service Dr
Co Proj No Trf 560

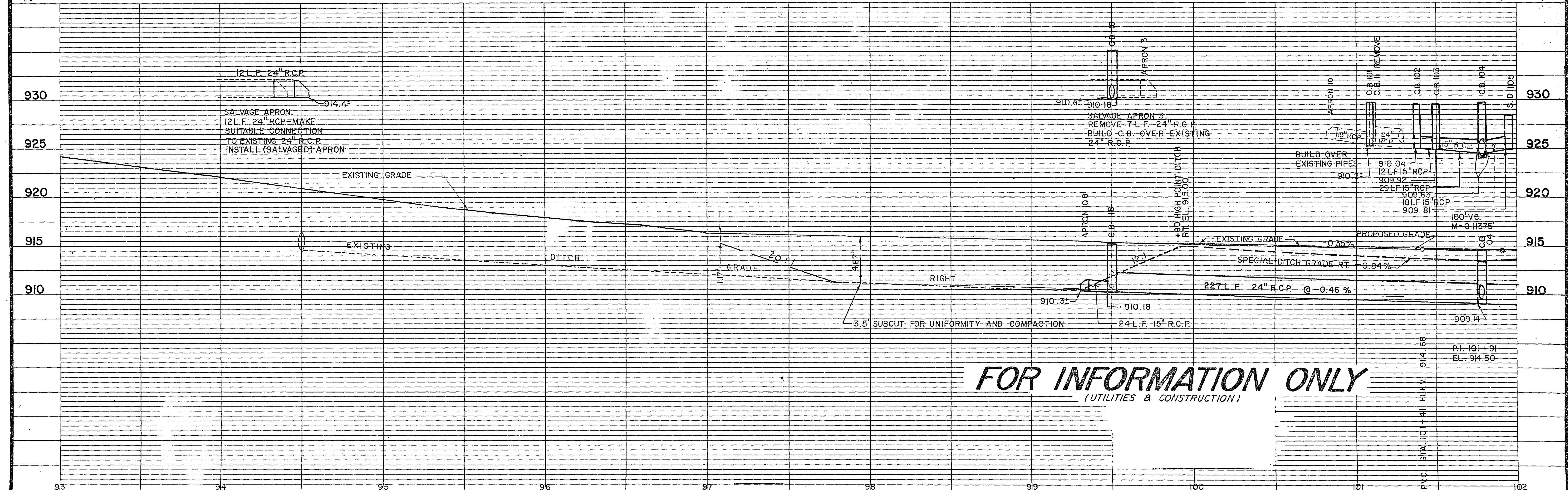
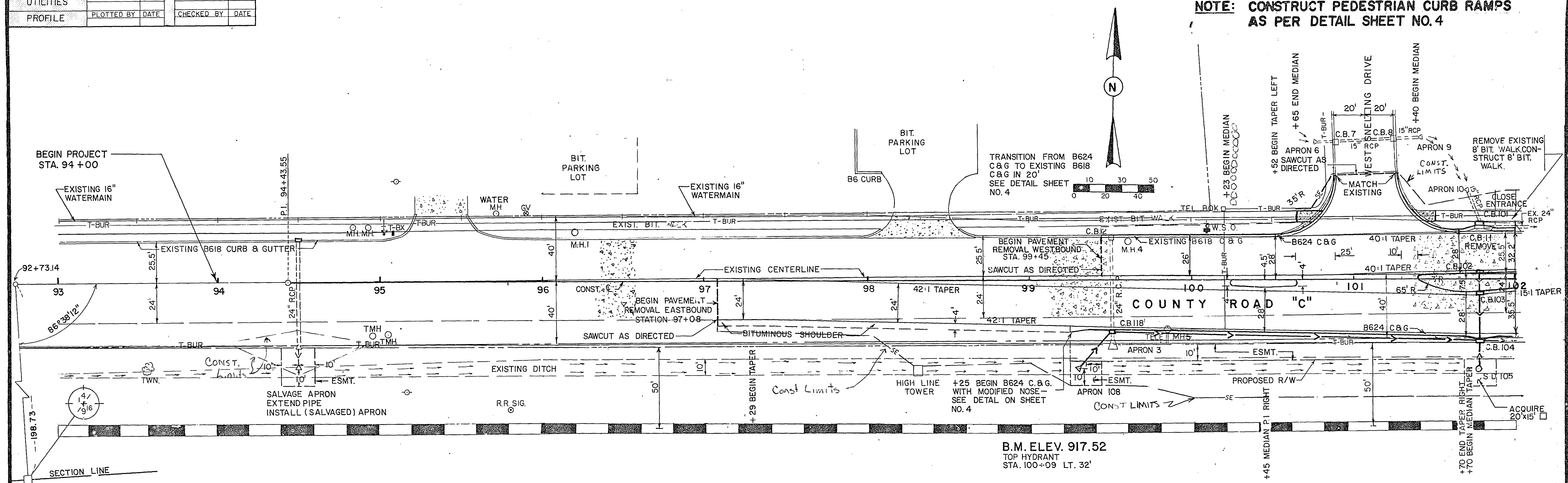
1-6

2-4-X

23-138

TOPOGRAPHY	PLOTTED BY	DATE	CHECKED BY	DATE
UTILITIES	PLOTTED BY	DATE	CHECKED BY	DATE
PROFILE	PLOTTED BY	DATE	CHECKED BY	DATE

NOTE: CONSTRUCT PEDESTRIAN CURB RAMPS AS PER DETAIL SHEET NO. 4



FOR INFORMATION ONLY
(UTILITIES & CONSTRUCTION)

CO. PROJ. NO. TRF-560

Sheet No. 5 of 6 Sheets

23-138

23-138 Co Rd C & West Snelling Service Dr
Co Proj No Trf 560

1-6

