PVC LOOP DETECTOR CHART		
NUMBER	SIZE (FT)	LOCATION
D1-1	6X6	5'
D1-2	6X6	25'
D2-1	6X6	120'
D2-2	6X6	120'
D4-1	6X6	120'
D4-2	6X6	25'
D4-3	6X6	0'
D4-4	6X6	10'
D5-1	6X6	5'
D5-2	6X6	25'
D6-1	6X6	140'
D6-2	6X6	140'
D8-1	6X6	120'
D8-2	6X6	25'
D8-3	6X6	5'
D8-4	6X6	0'

-LOCATION: DISTANCE FROM CROSSWALK IN FEET

PED PB STATION
1-APS PB AND SIGN
(LT ARROW) (PB8-1)
EXTEND INTO HH 2:
2" PVC
1-2/C #14

PED PB STATION
1-APS PB AND SIGN
(RT ARROW) (PB6-2)
EXTEND INTO HH 1:
2" PVC
1-2/C #14

HH 54 TO HH 53:
2" RSC
ABANDON 1-25PR 19

HH 53 TO HH 55:
2" RSC
ABANDON 1-25PR 19

*F&I 1.25" CONDUIT
1-FO CABLE (6SM)

*F&I 1.25" CONDUIT
1-FO CABLE (72SM)

*F&I FO-PULL VAULT

*F&I 1-1.25" CONDUIT
1-FO PIGTAIL (6SM)

PV

8 EVP

4 EVP

6+1 EVP

INSTALL CAMERA
30097

2+5 EVP

8 EVP

PED PB STATION
1-APS PB AND SIGN
(LT ARROW) (PB6-1)
EXTEND INTO HH 4:
2" PVC
1-2/C #14

PED PB STATION
1-APS PB AND SIGN
(RT ARROW) (PB4-2)
EXTEND INTO HH 5:
2" PVC
1-2/C #14

*F&I 1.25" CONDUIT
1-FO CABLE (72SM)

6+1 EVP

PED PB STATION
1-APS PB AND SIGN
(RT ARROW) (PB8-2)
EXTEND INTO HH 11:
2" PVC
1-2/C #14

PED PB STATION
1-APS PB AND SIGN
(RT ARROW) (PB2-2)
EXTEND INTO HH 9:
2" PVC
1-2/C #14

PINE ST. (30 MPH)

T.H. 55 W.B.

T.H. 55 E.B.

(30 MPH)

N

40

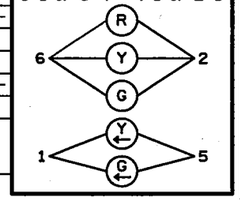
SCALE IN FEET

SIGNAL HEAD CHART					
FACE	R	Y	G	R	Y
2-2,2-3	○	○	○		
2-1,2-4	○	○	○	◁	◁
4-1,4-2,4-3	○	○	○		
6-2,6-3	○	○	○		
6-1,6-4	○	○	○	◁	◁
8-1,8-2,8-3	○	○	○		

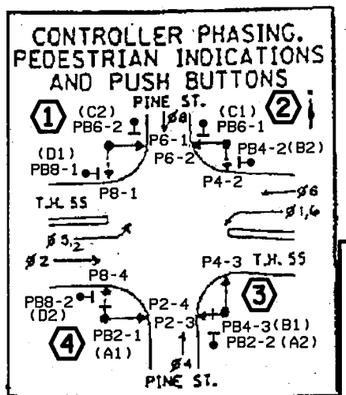
-ALL SIGNAL INDICATIONS ARE 12"
-ALL SIGNAL HEADS HAVE BACKGROUND SHIELDS

SIGNAL HEAD PHASING

HEADS 6-1 & 6-4 / HEADS 4-1 & 2-3



CONTROLLER PHASING. PEDESTRIAN INDICATIONS AND PUSH BUTTONS



SIGNAL SYSTEM OPERATION

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

HH 1 TO HH 3:
2" RSC
1-2/C 14
1-3/C 20

HH 1 TO HH 4
3" RSC
4-12/C 12
2-3/C 12
11-2/C 14
3-3/C 20

2" RSC
2-3/C 12

HH 4 TO HH 5
3" IMC
2-12/C 12
3-3/C 12
11-2/C 14
2-3/C 20

HH 5 TO HH 6:
2" RSC
2-2/C 14
1-3/C 20

HH 5 TO HH 7
3" RSC
2-12/C 12
3-3/C 12
7-2/C 14
1-3/C 20

HH 7 TO HH 8:
3" RSC
2-12/C 12
3-3/C 12
5-2/C 14
1-3/C 20

HH 8 TO HH 9:
2" RSC
5-2/C 14

HH 9 TO HH 10:
2" RSC
1-2/C 14

HH 11 TO HH 12:
2" RSC
2-2/C 14

HH 11 TO HH 13:
3" RSC
2-12/C 12
1-3/C 12
3-2/C 14
1-3/C 20

HH 2 TO HH 13:
3" RSC
2-12/C 12
1-3/C 12
5-2/C 14
1-3/C 20

REVISE SIGNAL SYSTEM:

A VIDEO CAMERA SHALL BE PLACED ON POLE NUMBER 1. THE EXISTING LUMINAIRE EXTENSION SHALL BE REMOVED AND REPLACED WITH A COMBINATION LUMINAIRE/CAMERA EXTENSION AND CABLE SHALL BE ROUTED THROUGH THE SIGNAL SYSTEM TO THE SIGNAL CONTROLLER CABINET. THE SIGNAL CONTROL CABINET SHALL BE REPLACED. SEE THE TMS PLAN SHEETS FOR FIBER OPTIC CONNECTION WORK.

REVISE SIGNAL SYSTEM NOTES:

1. INSTALL VIDEO CAMERA ON POLE NO. 1 (SUPPLIED BY MNDOT)
2. ALL ITEMS ARE INPLACE UNLESS OTHERWISE NOTED.
3. THE CAMERA EXTENSION SHALL BE GROUNDED IN HH 2 WITH A 5/8"X 15' GROUND ROD (SEE DETAIL).
4. THE EXISTING SIGNAL CABINET CONCRETE FOUNDATION HAS A 2" CONDUIT WITH 1-25PR 19 TO INPLACE HH 54. ABANDON 1-25PR 19 AND ROUTE 1-FO PIGTAIL (6SM) TO THE SIGNAL CABINET THROUGH THIS CONDUIT.
5. REPLACE (INSTALL) THE SIGNAL CONTROL CABINET
6. * DENOTES WORK TO BE COMPLETED AS PART OF THE TMS PLAN.

BY	DATE	REVISIONS

SYSTEM ID: 1735421 T.E. 9663
METER ADDRESS: 802 HWY 55
OLD SYSTEM ID: 20933

INTERSECTION LAYOUT
REVISE SIGNAL SYSTEM E
T.H. 55 AT PINE STREET
IN HASTINGS, DAKOTA COUNTY

S.A.P. NO. | DRAWN BY: SJK | CKD BY: CDB | DATE: 12/12/18

CERTIFIED BY Michael P. Gilbertson LICENSED PROFESSIONAL ENGINEER LIC. NO. 19863 DATE: 01/08/19

STATE PROJ.NO. 1910-50 (T.H.55) SHEET NO. SS17 OF SS35 SHEETS

(1)

A100 POLE FOUNDATION
TYPE A100-A-40-9

REMOVE — D40-9 (DAVIT AT 350 DEG)

F&I — 1-X6-350/CAM EXTENSION (MOUNTED AT 350 DEG)
INCLUDEDS LIGHTING ROD
7/16" GROUND BRAID

INSTALL — 1-VIDEO CAMERA WITH MOUNT

2-ONE WAY SIGNALS (OVERHEAD)
2-TYPE 10B AT 0 AND 270 DEG
2-CD PED HEADS

S&I — LUMINAIRE - 200 WATT HPS
ONE WAY EVP DETECTOR AND
CONFIRMATORY LIGHT (PHASES 6+1)
2" RSC STUB-OUT FOR CITY STREET LIGHTING
CITY LIGHTING CABLES
3" IMC TO HH 2 WITH
2-12/C#12
4-3/C#12
1-3/C#20

F&I — 1-7/16" GROUND BRAID
TO GROUND ROD
1-COM CABLE (CAT 5E)

(2)

P90 POLE FOUNDATION
TYPE P90-A-25
ONE WAY SIGNAL (OVERHEAD)
2-TYPE 10B AT 90 AND 270 DEG
2-CD PED HEADS
ONE WAY EVP DETECTOR AND
CONFIRMATORY LIGHT (PHASE 4)
3" IMC TO HH 4 WITH
2-12/C#12
4-3/C#12
1-3/C#20

(3)

A100 POLE FOUNDATION
TYPE A100-A-40-9 (DAVIT AT 350 DEG)
2-ONE WAY SIGNALS (OVERHEAD)
2-TYPE 10B AT 0 AND 270 DEG
2-CD PED HEADS
1-APS PB & SIGN (PB4-3)(LT ARROW)
LUMINAIRE - 200 WATT HPS
ONE WAY EVP DETECTOR AND
CONFIRMATORY LIGHT (PHASES 2+5)
2" RSC STUB-OUT FOR STREET LIGHTING
CITY LIGHTING CABLES
3" IMC TO HH 8 WITH
2-12/C#12
3-3/C#12
1-3/C#20

(4)

P90 POLE FOUNDATION
TYPE P90-A-25
ONE WAY SIGNAL (OVERHEAD)
2-TYPE 10B AT 90 AND 270 DEG
2-CD PED HEADS
1-APS PED PB & SIGN (PB2-1)(LT ARROW)
ONE WAY EVP DETECTOR AND
CONFIRMATORY LIGHT (PHASE 8)
3" IMC TO HH 11 WITH
2-12/C#12
2-3/C#12
1-3/C#20

(5)

ONE WAY EP DETECTOR 06 MOUNTED
NEAR TOP OF STREET LIGHT POLE
2" RSC INTO HH 6 WITH
1-3/C#20

(6)

PEDESTAL POLE AND BASE
PEDESTAL FOUNDATION
ONE WAY EVP DETECTOR (PHASE 8)
MOUNTED ON TOP OF PEDESTAL
2" RSC TO HH 3 WITH
1-3/C#20

(A)

REPLACE (INSTALL) — CONTROLLER AND CABINET
CABINET FOUNDATION

EXTEND INTO HH 1:
4" IMC
4-12/C 12
4-3/C 12
16-2/C 14
4-3/C 20
2-1/C 6
1-1/C 6 INS GR

EXTEND INTO HH 2:
4" IMC
4-12/C 12
4-3/C 12
6-2/C 14
2-3/C 20

F&I — 1-COM CABLE (CAT 5E)

EXTEND INTO HH 54:
2" RSC

ABANDON — 1-25 PR#19

*F&I — 1-FO PIGTAIL (6SM - FIELD TERMINATED)

HH54 TO PULL VAULT
1.25" CONDUIT
1-FO PIGTAIL (6SM)

(B)

WOOD POLE
SERVICE EQUIPMENT
EXTEND INTO HH 1:
2" RSC
2-1/C 6
1-1/C 6 INS GR

BY	DATE	REVISIONS

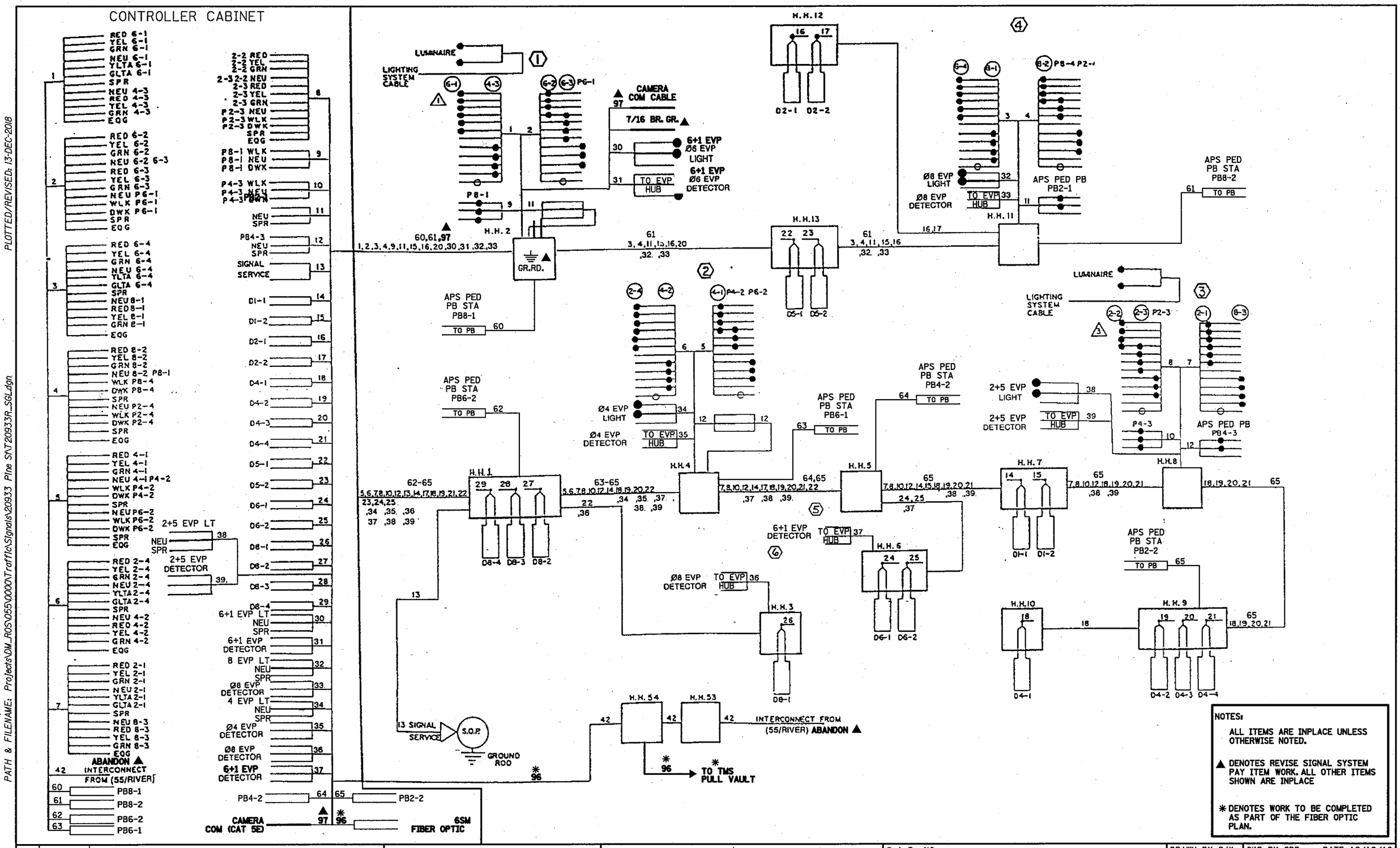
SYSTEM ID: 1735421 T.E. 9663
METER ADDRESS: 802 HWY 55
OLD SYSTEM ID: 20933

POLE NOTES
REVISE SIGNAL SYSTEM E
T.H. 55 AT PINE STREET
IN HASTINGS, DAKOTA COUNTY

S.A.P. NO. | DRAWN BY: SJK | CKD BY: CDB | DATE: 12/12/18

CERTIFIED BY Michael P. Gubrud — LICENSED PROFESSIONAL ENGINEER — LIC. NO. 19863 DATE: 12/12/18

STATE PROJ.NO. 1910-50 (T.H.55) SHEET NO. SS18 OF SS35 SHEETS



PLOTTED/REVISED: 13-DEC-2018

PLOT NAME: system E wiring diagram

PATH & FILENAME: Projects\DM_ROS\055\0000\Traffic\Signals\20933 Pine SNT20933R_SGLdgn

BY	DATE	REVISIONS

SYSTEM ID: 1735421 T.E. 9663

METER ADDRESS: 802 HWY 55

OLD SYSTEM ID: 20933

FIELD WIRING DIAGRAM
REVISE SIGNAL SYSTEM E
T.H. 55 AT PINE STREET
IN HASTINGS, DAKOTA COUNTY

S.A.P. NO. | DRAWN BY: SJK | CKD BY: CDB | DATE: 12/12/18

CERTIFIED BY Michael P. Gibrosky LICENSED PROFESSIONAL ENGINEER LIC. NO. 19863 DATE: 12/12/18

STATE PROJ.NO. 1910-50 (T.H.55) SHEET NO. SS19 OF SS35 SHEETS

PLOTTED/REVISED: 4/29/2014

DISTRICT #: METRO
IPLOT NAME: INTERSECTION
PATH & FILENAME: //P_PWP-d078970T20933R_SGL.dgn

PVC LOOP DETECTOR CHART

NUMBER	SIZE (FT)	LOCATION
D1-1	6X6	5'
D1-2	6X6	25'
D2-1	6X6	120'
D2-2	6X6	120'
D4-1	6X6	120'
D4-2	6X6	25'
D4-3	6X6	0'
D4-4	6X6	10'
D5-1	6X6	5'
D5-2	6X6	25'
D6-1	6X6	140'
D6-2	6X6	140'
D8-1	6X6	120'
D8-2	6X6	25'
D8-3	6X6	5'
D8-4	6X6	0'

-LOCATION: DISTANCE FROM CROSSWALK IN FEET

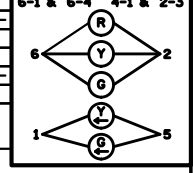
SIGNAL HEAD CHART

FACE	R	Y	G	R	Y
2-2,2-3	○	○	○		
2-1,2-4	○	○	○	⇦	⇦
4-1,4-2,4-3	○	○	○		
6-2,6-3	○	○	○		
6-1,6-4	○	○	○	⇦	⇦
8-1,8-2,8-3	○	○	○		

-ALL SIGNAL INDICATIONS ARE 12"
-ALL SIGNAL HEADS HAVE BACKGROUND SHIELDS

SIGNAL HEAD PHASING

HEADS 6-1 & 6-4 — HEADS 4-1 & 2-3



(1) A100 POLE FOUNDATION
TYPE A100-A-40-9 (DAVIT AT 350 DEG)
2-ONE WAY SIGNALS (OVERHEAD)
2-TYPE 10B AT 0 AND 270 DEG
2-CD PED HEADS
LUMINAIRE - 200 WATT HPS
ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 6+1)
2" RSC STUB-OUT FOR CITY STREET LIGHTING
CITY LIGHTING CABLES
3" IMC TO HH 2 WITH
2-12/C#12
4-3/C#12
1-3/C#20

(2) P90 POLE FOUNDATION
TYPE P90-A-25
ONE WAY SIGNAL (OVERHEAD)
2-TYPE 10B AT 90 AND 270 DEG
2-CD PED HEADS
ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASE 4)
3" IMC TO HH 4 WITH
2-12/C#12
4-3/C#12
1-3/C#20

(3) A100 POLE FOUNDATION
TYPE A100-A-40-9 (DAVIT AT 350 DEG)
2-ONE WAY SIGNALS (OVERHEAD)
2-TYPE 10B AT 0 AND 270 DEG
2-CD PED HEADS
1-APS PB & SIGN (PB4-3XLT ARROW)
LUMINAIRE - 200 WATT HPS
ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 2+5)
2" RSC STUB-OUT FOR STREET LIGHTING
CITY LIGHTING CABLES
3" IMC TO HH 8 WITH
2-12/C#12
3-3/C#12
1-3/C#20

(4) P90 POLE FOUNDATION
TYPE P90-A-25
ONE WAY SIGNAL (OVERHEAD)
2-TYPE 10B AT 90 AND 270 DEG
2-CD PED HEADS
1-APS PED PB & SIGN (PB2-1)XLT ARROW)
ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASE 8)
3" IMC TO HH 11 WITH
2-12/C#12
2-3/C#12
1-3/C#20

(5) ONE WAY EP DETECTOR 06 MOUNTED NEAR TOP OF STREET LIGHT POLE
2" RSC INTO HH 6 WITH
1-3/C#20

(6) PEDESTAL POLE AND BASE
PEDESTAL FOUNDATION
ONE WAY EVP DETECTOR (PHASE 8) MOUNTED ON TOP OF PEDESTAL
2" RSC TO HH 3 WITH
1-3/C#20

PED PB STATION
1-APS PB AND SIGN (LT ARROW) (PB6-1)
EXTEND INTO HH 4:
2" PVC
1-2/C #14

PED PB STATION
1-APS PB AND SIGN (RT ARROW) (PB6-2)
EXTEND INTO HH 1:
2" PVC
1-2/C #14

PED PB STATION
1-APS PB AND SIGN (LT ARROW) (PB8-1)
EXTEND INTO HH 2:
2" PVC
1-2/C #14

PED PB STATION
1-APS PB AND SIGN (RT ARROW) (PB4-2)
EXTEND INTO HH 5:
2" PVC
1-2/C #14

PED PB STATION
1-APS PB AND SIGN (RT ARROW) (PB8-2)
EXTEND INTO HH 11:
2" PVC
1-2/C #14

PED PB STATION
1-APS PB AND SIGN (RT ARROW) (PB2-2)
EXTEND INTO HH 9:
2" PVC
1-2/C #14

(A) CONTROLLER AND CABINET
CABINET FOUNDATION
EXTEND INTO H.H.1:
4" I.M.C.
4-12/C #12
4-3/C #12
16-2/C #14
2-1/C #6
1-1/C #6 GR.GR.
4-3/C#20

EXTEND INTO H.H.2:
4" I.M.C.
4-12/C #12
4-3/C #12
6-2/C #14
2-3/C#20

EXTEND INTO H.H.54
2" R.S.C.
1-25 FR.#18
2" R.S.C. STUB-OUT
THREAD AND CAP BOTH ENDS

(B) WOOD POLE
SERVICE EQUIPMENT
EXTEND INTO HH 1:
2" RSC
2-1/C#6
1-1/C#6 GR. GR.

H.H.1 TO H.H.3:
2" R.S.C.
1- 2/C #14
1-3/C#20

H.H.1 TO H.H.4:
3" R.S.C.
4-12/C #12
2- 3/C #12
11- 2/C #14
3-3/C#20
2" R.S.C.
2-3/C#12

H.H.4 TO H.H.5:
3" I.M.C.
2-12/C #12
3- 3/C #12
11- 2/C #14
2-3/C#20

H.H.5 TO H.H.6:
2" R.S.C.
2- 2/C #14
1-3/C#20

H.H.5 TO H.H.7:
3" R.S.C.
2-12/C #12
3- 3/C #12
7- 2/C #14
1-3/C#20

H.H.7 TO H.H.8:
3" R.S.C.
2-12/C #12
3- 3/C #12
5- 2/C #14
1-3/C#20

H.H.8 TO H.H.9:
2" R.S.C.
5- 2/C #14

H.H.9 TO H.H.10:
2" R.S.C.
1- 2/C #14

H.H.11 TO H.H.12:
2" R.S.C.
2- 2/C #14

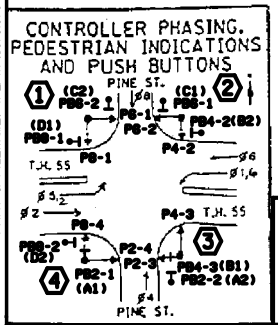
H.H.11 TO H.H.13:
3" R.S.C.
2-12/C #12
1- 3/C #12
3- 2/C #14
1-3/C#20

H.H.2 TO H.H.13:
3" R.S.C.
2-12/C #12
1- 3/C #12
5- 2/C #14
1-3/C#20

H.H.54 TO H.H.53:
2" R.S.C.
1-25 FR.#18

H.H.53 TO H/L
2" R.S.C.
1-25 FR.#18

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS



SIGNAL SYSTEM OPERATION

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

BY	DATE	REVISIONS
EJA	04-29-14	AS-BUILT OF SP 8825-445 (APS & CD PEDS)

SYSTEM ID: 20933 T.E. 5823
METER ADDRESS:
MASTER ID: T.E.

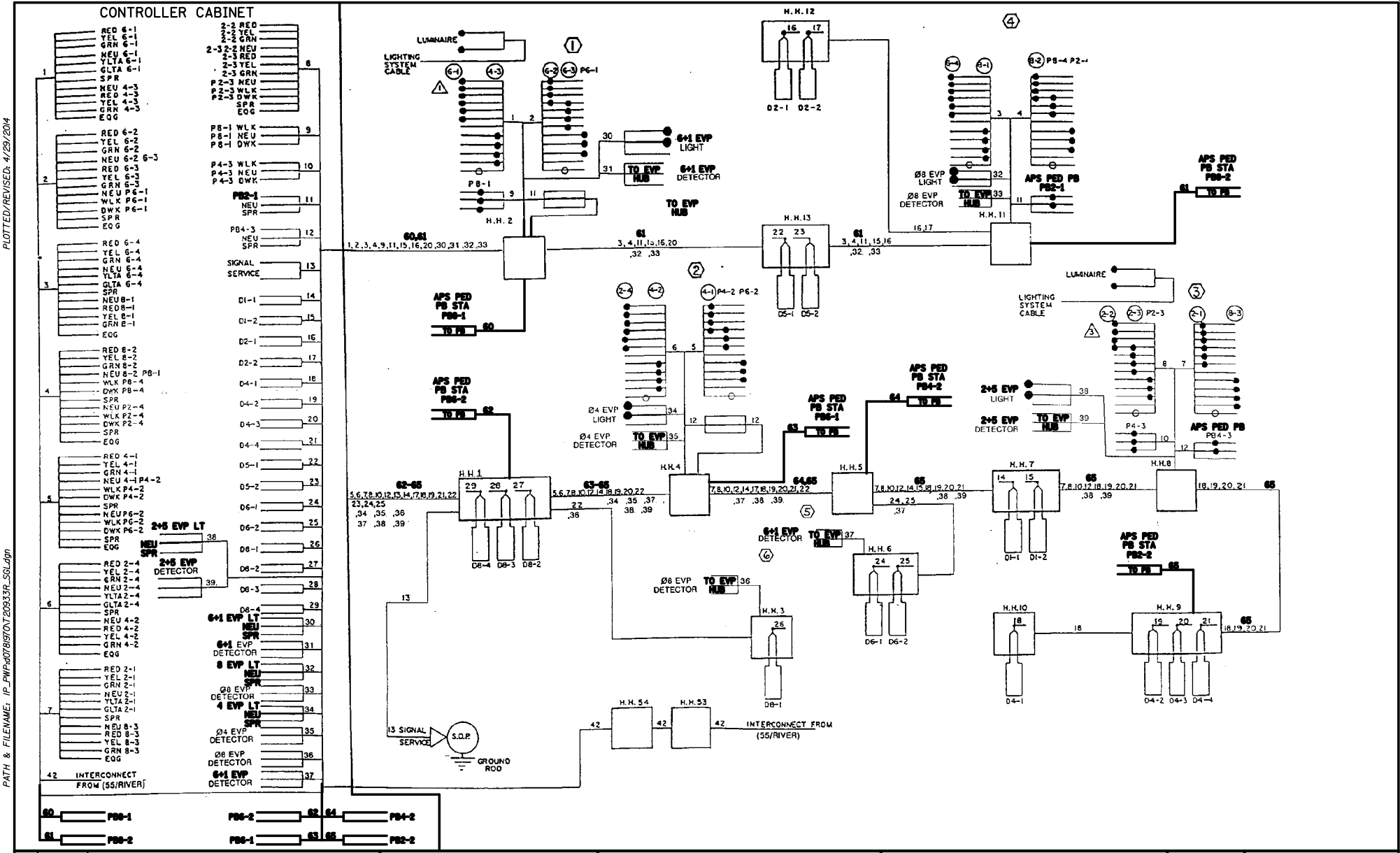
INTERSECTION LAYOUT
T.H. 55 AT PINE STREET
IN HASTINGS, DAKOTA COUNTY

S.A.P. NO. | DRAWN BY: MAS | CKD BY: GAK | DATE: 4-12-13

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER LIC. NO. 26829 DATE: _____

STATE PROJ. NO.

SHEET NO. 1 OF 2 SHEETS



BY	DATE	REVISIONS
EJA	04-29-14	AS-BUILT OF SP 8825-445 (APS & CD PEDS)

SYSTEM ID: 20933 T.E. 5823
METER ADDRESS:
MASTER ID: T.E.

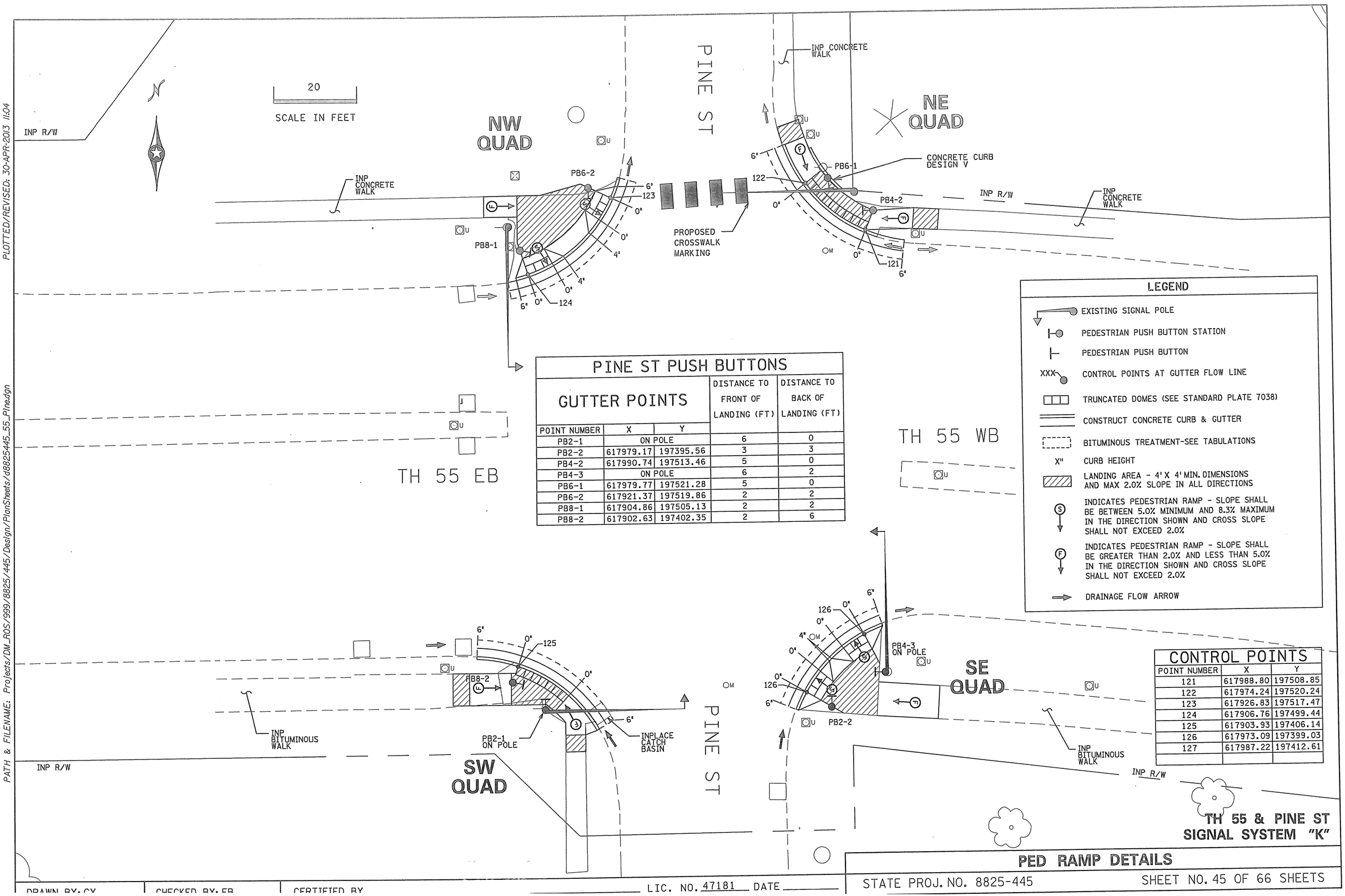
FIELD WIRING DIAGRAM
T.H. 55 AT PINE STREET
IN HASTINGS, DAKOTA COUNTY

S.A.P. NO. | DRAWN BY: MAS | CKD BY: GAK | DATE: 4-12-13

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER LIC. NO. 26829 DATE: _____

STATE PROJ. NO. | SHEET NO. 2 OF 2 SHEETS

PLOTTED/REVISED: 4/29/2014
DISTRICT *: METRO
IPLOT NAME: WIRING
PATH & FILENAME: //P_PWP-d0708j970NT20933R_SGL.dgn



PINE ST PUSH BUTTONS

GUTTER POINTS			DISTANCE TO FRONT OF LANDING (FT)	DISTANCE TO BACK OF LANDING (FT)
POINT NUMBER	X	Y		
PB2-1	ON POLE		6	0
PB2-2	617979.17	197395.56	3	3
PB4-2	617990.74	197513.46	5	0
PB4-3	ON POLE		6	2
PB6-1	617979.77	197521.28	5	0
PB6-2	617921.37	197519.86	2	2
PB8-1	617904.86	197505.13	2	2
PB8-2	617902.63	197402.35	2	6

LEGEND

- EXISTING SIGNAL POLE
- PEDESTRIAN PUSH BUTTON STATION
- PEDESTRIAN PUSH BUTTON
- XXX — CONTROL POINTS AT GUTTER FLOW LINE
- TRUNCATED DOMES (SEE STANDARD PLATE 7038)
- CONSTRUCT CONCRETE CURB & GUTTER
- BITUMINOUS TREATMENT-SEE TABULATIONS
- X" CURB HEIGHT
- LANDING AREA - 4' X 4' MIN. DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS
- (S) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
- (F) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
- DRAINAGE FLOW ARROW

CONTROL POINTS

POINT NUMBER	X	Y
121	617988.80	197508.85
122	617974.24	197520.24
123	617926.83	197517.47
124	617906.76	197499.44
125	617903.93	197406.14
126	617973.09	197399.03
127	617987.22	197412.61

TH 55 & PINE ST
SIGNAL SYSTEM "K"

PED RAMP DETAILS

DRAWN BY: CX | CHECKED BY: EB | CERTIFIED BY | LIC. NO. 47181 DATE

STATE PROJ. NO. 8825-445 | SHEET NO. 45 OF 66 SHEETS