

NOTES:

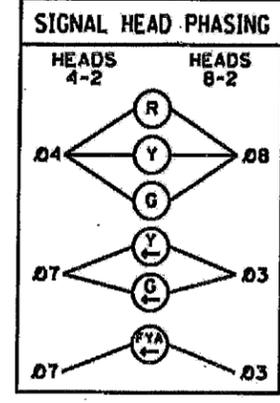
1. SEE SPECIAL PROVISIONS FOR DEPARTMENT FURNISHED MATERIALS.
2. THE EXACT LOCATION OF HANDHOLES AND LOOP DETECTORS, SHALL BE VERIFIED IN THE FIELD BY TRAFFIC OFFICE PERSONNEL.
3. PAVEMENT MARKINGS ARE INCLUDED IN PAVEMENT MARKING PLAN.
4. CONSTRUCTION OF PEDESTRIAN CURB RAMP ARE PART OF THE CONSTRUCTION PLAN AND ARE NOT INCLUDED IN PAYMENT FOR THE SIGNAL SYSTEM.
5. THIS PLAN SPECIFIES CONDUIT SIZES, TYPES, AND GENERAL LOCATIONS. THE EXACT LOCATIONS WILL BE DETERMINED IN THE FIELD. CONDUITS UNDER THE ROADWAYS MAY REQUIRE BORING.
6. ALL NEW CONDUIT SHALL BE PVC - SCHEDULE 80 OR HDPE SCHEDULE 80 AND SHALL CARRY 1/2" #6 GREEN INSULATED GROUNDING CONDUCTOR AS SHOWN IN THE PLAN.
7. CONTRACTOR SHALL CONTACT THE APPROPRIATE COUNTY PERSONAL BEFORE ANY MODIFICATIONS TO THE SIGNAL CABINET.
8. ANY MODIFICATIONS TO THE SIGNAL CABINET OR HARDWARE NEEDED FOR REINSTALLING THE SIGNAL INDICATIONS SHALL BE INCIDENTAL.

LOOP DETECTOR CHART		
NUMBER	SIZE (FT)	LOCATION
D1-1, D1-2	2-6x6	INP
D2-1, D2-2, D2-3	6x6	INP
D3-1, D3-2	2-6x6	INP
D4-1, D4-2	6x6	180'
D4-3	2-6x6	-5' & 5'
D4-4	2-6x6	5' & 20'
FUTURE D4-5	2-6x6	35' & 50'
D5-1, D5-2	2-6x6	INP
D6-1, D6-2	6x6	INP
D7-1	2-6x6	20' & 50'
D7-2	2-6x6	5' & 35'
D8-1	6x6	INP
D8-2	2-6x6	INP
D8-3	2-6x6	INP

-ALL LOOP DETECTORS SHALL BE PVC
-LOCATION: DISTANCE FROM CROSSWALK/STOP BAR IN FEET

SIGNAL FACE CHART							
FACE	R	Y	G	RLA	YLA	FYA	GLA
1-1, 1-2				←	←	←	←
2-1, 2-2, 2-3, 2-4	○	○	○				
3-1, 3-2				←	←	←	←
4-1, 4-2	○	○	○				
5-1, 5-2				←	←	←	←
6-1, 6-2, 6-3	○	○	○				
7-1, 7-2				←	←	←	←
8-1, 8-2	○	○	○				

-ALL SIGNAL INDICATIONS SHALL BE 12" LED
-ALL SIGNAL HEADS SHALL BE BLACK POLYCARBONATE WITH BACKGROUND SHIELDS



INPLACE
4" PVC
2 - 12/C #14
1 - 6/C #14
2 - 4/C #14
1 - 3/C #14
1 - 3/C #14 (LUM.)
6 - 2/C #14
1 - 3/C #20
1 - 1/C #6 INS. GR.
1 - FO CABLE (6MM, 6SM)

F&I: 2-2/C#14

INPLACE
2" PVC
5 - 2/C #14

F&I: 2-2/C#14

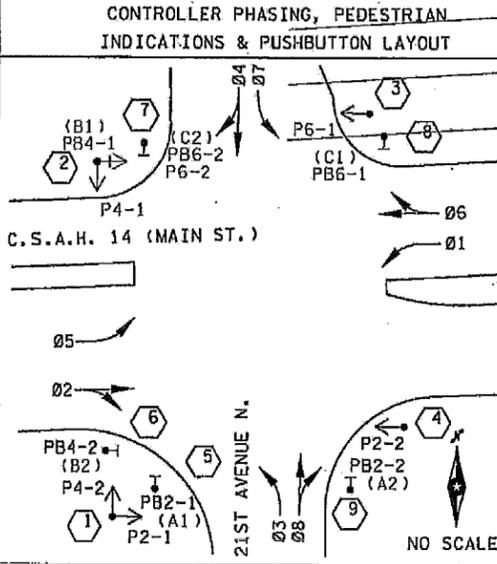
INPLACE
4" PVC
2 - 2/C #14
2 - 12/C #14
1 - 4/C #14
1 - 3/C #14
1 - 3/C #14 (LUM.)
1 - 2/C #14
1 - 3/C #20
1 - 1/C #6 INS. GR.

F&I: 1-12/C#14 (FUTURE)

INPLACE
2" PVC
2 - 2/C #14

SIGNAL OPERATION NOTES

- NORMAL OPERATION IS 6 PHASE
- FLASH MODE SHALL BE ALL RED
- 01, 03, 05 AND 07 SHALL BE PROTECTED/PERMISSIVE LEFT TURNS WITH FLASHING YELLOW ARROW BY TIME OF DAY
- 02 AND 06 SHALL BE ON VEHICLE RECALL
- SPLIT PHASE/CONCURRENT PHASE BY TIME OF DAY



INPLACE
2" PVC
1 - FO CABLE (6MM, 6SM)
(TO 20TH AVE.)

C.S.A.H. 14 (MAIN STREET)
(45 M.P.H.)

INPLACE
4" PVC
2 - 12/C #14
1 - 6/C #14
2 - 4/C #14
1 - 3/C #14
1 - 3/C #14 (LUM.)
8 - 2/C #14
1 - 3/C #20
1 - 1/C #6 INS. GR.
1 - FO CABLE (6MM, 6SM)

F&I: 2-2/C#14

INPLACE
4" PVC
3 - 2/C #14
1 - FO CABLE (6MM, 6SM)
4 - 12/C #14
1 - 6/C #14
4 - 4/C #14
2 - 3/C #14
2 - 3/C #14 (LUM.)
10 - 2/C #14
2 - 3/C #20
1 - 1/C #6 INS. GR.

F&I: 2-2/C#14

INPLACE
2" PVC
2 - 3/C #14 (LUM.)
HH-1
INPLACE
2" PVC
6 - 2/C #14

INPLACE
4" PVC
2 - 2/C #14
2 - 12/C #14
1 - 4/C #14
1 - 3/C #14
1 - 3/C #14 (LUM.)
3 - 2/C #14
1 - 3/C #20
1 - 1/C #6 INS. GR.

F&I: 1-12/C#14 (FUTURE)

INPLACE
2" PVC
1 - FO CABLE (6MM, 6SM)

INPLACE
4" PVC
2 - 12/C #14
1 - 3/C #14
1 - 3/C #14 (LUM.)
2 - 2/C #14
1 - 3/C #20
1 - FO CABLE (6MM, 6SM)
1 - 1/C #6 INS. GR.

F&I: 1-12/C#14 (FUTURE)

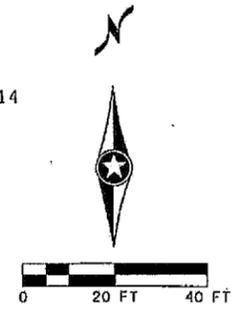
3 - 12/C #14
1 - 6/C #14
2 - 4/C #14
1 - 3/C #14
1 - 3/C #14 (LUM.)
3 - 2/C #14
1 - 3/C #20

LEGEND

ALL WIRING IS INPLACE UNLESS NOTED

■ FURNISH & INSTALL

STATE SYSTEM ID #38824
METER ADDRESS:
2108 MAIN STREET
T.E. #5832



1. VERIFY COUNTY THAT THE PLAN INFORMATION ON SHEET 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.

Charles T. Beckwith
CHARLES T. BECKWITH, P.E.
JUL 27, 2014, 14: 26002

21ST AVENUE NORTH STREET & UTILITY CONSTRUCTION
LINO LAKES, MINNESOTA

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WSB
Infrastructure & Utility Construction

1 INPLACE
 PA100 POLE FOUNDATION
 TYPE PA100-A-45-D40-9 (DAVIT AT 350°)
 1 - STRAIGHT MOUNT SIGNAL OVERHEAD AT 0' AND 18'
 1 - ANGLE MOUNT SIGNAL AT 90°
 1 - ANGLE MOUNT SIGNAL AT 180°
 1 - ANGLE MOUNT C.D. PED IND AT 90°
 1 - ANGLE MOUNT C.D. PED IND AT 180°
 ONE WAY EVP DETECTOR AND
 CONFIRMATORY LIGHT (PHASES 4+7)
 LUMINAIRE - 250 WATT H.P.S.
 TYPE D SIGN - SEE MAST ARM SIGN DETAILS
 1 - R10-X12 SIGN (ADJACENT TO HEAD 7-1)
 EXTEND INTO HH-2:
 3" CONDUIT
 2 - 12/C #14
 2 - 4/C #14
 1 - 3/C #14
 1 - 3/C #14 (LUM.)
 1 - 3/C #20
 1 - 1/C #6 INS.GR.

2 INPLACE
 PA100 POLE FOUNDATION
 TYPE PA100-A-45-D40-9 (DAVIT AT 350°)
 1 - ANGLE MOUNT SIGNAL OVERHEAD AT 0'
 2 - STRAIGHT MOUNT SIGNALS OVERHEAD AT 12' AND 24'
 2 - ANGLE MOUNT SIGNALS AT 90° AND 180°
 1 - ANGLE MOUNT C.D. PED IND AT 90°
 1 - ANGLE MOUNT C.D. PED IND AT 180°
 ONE WAY EVP DETECTOR AND
 CONFIRMATORY LIGHT (PHASES 1+6)
 LUMINAIRE - 250 WATT H.P.S.
 TYPE D SIGN - SEE MAST ARM SIGN DETAILS
 1 - R6-1L SIGN (36x12)
 1 - R10-X12 SIGN (ADJACENT TO HEAD 1-1)
 EXTEND INTO HH-5:
 3" CONDUIT
 2 - 12/C #14
 1 - 6/C #14
 2 - 4/C #14
 1 - 3/C #14
 1 - 3/C #14 (LUM.)
 1 - 2/C #14
 1 - 3/C #20
 1 - 1/C #6 INS.GR.
 1 - APS PUSH BUTTON & SIGN (RT ARROW) PB4-1

3 INPLACE
 PA100 POLE FOUNDATION
 TYPE PA100-A-45-D40-9 (DAVIT AT 350°)
 1 - STRAIGHT MOUNT SIGNAL OVERHEAD AT 0' AND 16'
 ONE WAY EVP DETECTOR AND
 CONFIRMATORY LIGHT (PHASES 3+8)
 LUMINAIRE - 250 WATT H.P.S.
 TYPE D SIGN - SEE MAST ARM SIGN DETAILS
 1 - R10-X12 SIGN (ADJACENT TO HEAD 3-1)
 EXTEND INTO HH-7:
 3" CONDUIT
 1 - 12/C #14
 1 - 3/C #14
 1 - 3/C #14 (LUM.)
 1 - 3/C #20
 1 - 1/C #6 INS.GR.

A INPLACE
 EQUIPMENT PAD
 CONTROLLER & CABINET
 SERVICE CABINET
 1 - FIBER-OPTIC TELEMETRY
 INTERFACE PANEL WITH HARNESS
 2 - FIBER-OPTIC MODEMS
 EXTEND 4" CONDUIT INTO HH-1 WITH:
 3 - 2/C #14
 1 - FO CABLE (6MM, GSM)
 4 - 12/C #14
 1 - 6/C #14
 4 - 4/C #14
 2 - 3/C #14
 2 - 3/C #20
 16 - 2/C #14
 1 - 1/C #6 INS.GR.
 EXTEND 4" CONDUIT INTO HH-11 WITH:
 2 - 12/C #14
 1 - 3/C #14
 2 - 2/C #14
 1 - 3/C #20
 1 - FO CABLE (6MM, GSM)
 1 - 1/C #6 INS.GR.
 3 - 12/C #14
 2 - 4/C #14
 1 - 3/C #14
 3 - 2/C #14
 1 - 3/C #20
 3/4" CONDUIT STUBBED OUT
 (THREADED & CAPPED BOTH ENDS)
 CONTROLLER TO SERVICE CABINET
 EXTEND 2" CONDUIT WITH:
 2 - 1/C #6 AND 1 - 1/C #6 INS.GR.
 SERVICE CABINET TO HH-11
 EXTEND 2" CONDUIT WITH:
 1 - 3/C #14 (LUM.)
 3 - 3/C #14 (LUM.)
 SERVICE CABINET TO HH-12
 EXTEND 2" CONDUIT WITH:
 3 - 1/C #2
 3" CONDUIT STUBBED OUT

F&I:
 1-12/C=14 (FUTURE)

F&I:
 2-2/C=14

F&I:
 1-12/C=14 (FUTURE)

4 INPLACE
 PA100 POLE FOUNDATION
 TYPE PA100-A-55-D40-9 (DAVIT AT 350°)
 3 - STRAIGHT MOUNT SIGNALS OVERHEAD AT 18', 30' AND 42'
 1 - ANGLE MOUNT SIGNAL OVERHEAD AT 0'
 2 - ANGLE MOUNT SIGNALS AT 90° AND 180°
 1 - ANGLE MOUNT C.D. PED IND AT 180°
 ONE WAY EVP DETECTOR AND
 CONFIRMATORY LIGHT (PHASES 2+5)
 LUMINAIRE - 250 WATT H.P.S.
 TYPE D SIGN - SEE MAST ARM SIGN DETAILS
 1 - R6-1L SIGN (36x12)
 1 - R9-3a SIGN (18x18) FACING POLE B
 1 - R10-X12 SIGN (ADJACENT TO HEAD 5-1)
 EXTEND INTO HH-10:
 3" CONDUIT
 2 - 12/C #14
 1 - 3/C #14
 1 - 3/C #14 (LUM.)
 1 - 3/C #20
 1 - 1/C #6 INS.GR.
 1 - 12/C #14
 1 - 4/C #14

5 INPLACE
 PUSHBUTTON STATION FOUNDATION
 1 - APS PEDESTRIAN PUSH BUTTON STATION
 1 - APS PUSH BUTTON & SIGN (LT ARROW) PB2-1
 EXTEND INTO HH-2:
 2" CONDUIT
 1 - 2/C #14

6 INPLACE
 PUSHBUTTON STATION FOUNDATION
 1 - APS PEDESTRIAN PUSH BUTTON STATION
 1 - APS PUSH BUTTON & SIGN (RT ARROW) PB4-2
 EXTEND INTO HH-2:
 2" CONDUIT
 1 - 2/C #14

7 INPLACE
 PUSHBUTTON STATION FOUNDATION
 1 - APS PEDESTRIAN PUSH BUTTON STATION
 1 - APS PUSH BUTTON & SIGN (RT ARROW) PB6-2
 EXTEND INTO HH-6:
 2" CONDUIT
 1 - 2/C #14

8 INPLACE
 PEDESTAL POLE FOUNDATION
 13' PEDESTAL POLE AND BASE
 2 - ANGLE MOUNT SIGNALS AT 90° AND 180°
 1 - ANGLE MOUNT C.D. PED IND AT 90°
 1 - R9-3a SIGN (18x18) FACING POLE 2
 1 - APS PEDESTRIAN PUSH BUTTON STATION
 1 - APS PUSH BUTTON & SIGN (LT ARROW) PB6-1
 EXTEND INTO HH-7:
 3" CONDUIT
 1 - 12/C #14
 1 - 4/C #14
 1 - 2/C #14
 1 - 1/C #6 INS.GR.

9 INPLACE
 PUSHBUTTON STATION FOUNDATION
 1 - APS PEDESTRIAN PUSH BUTTON STATION
 1 - APS PUSH BUTTON & SIGN (RT ARROW) PB2-2
 EXTEND INTO HH-1:
 2" CONDUIT
 1 - 2/C #14

LEGEND
 ALL WIRING IS INPLACE
 UNLESS NOTED
 ■ FURNISH & INSTALL

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 Charles T. Reichel
 CHARLES T. REICHEL, P.E.
 DATE: JAN. 27, 2014. LIC. NO. 25892

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