

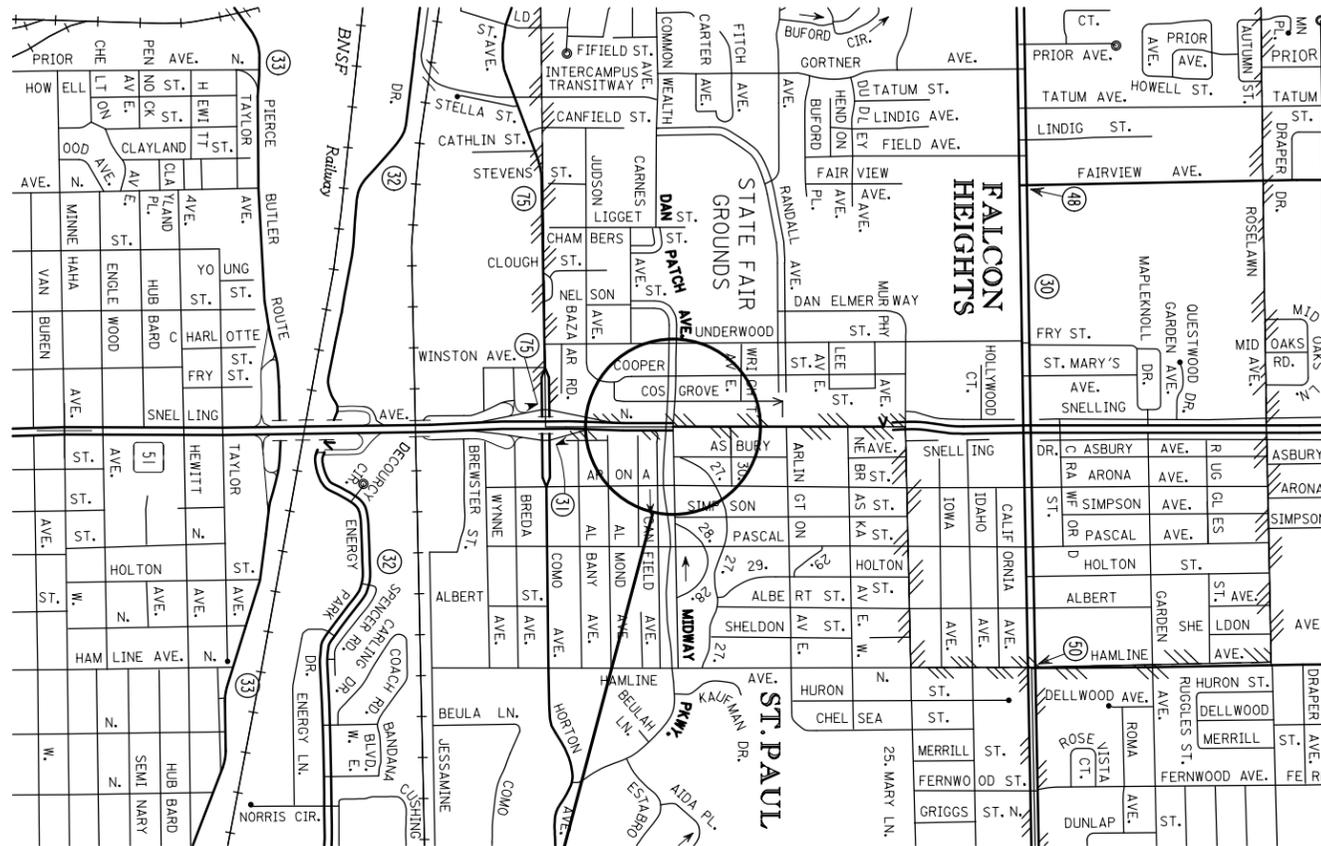
ABBREVIATIONS

AWF	ADVANCE WARNING FLASHER
C.D.	COUNT DOWN
D2-1 (e.g.)	DETECTOR (PHASE 2, NO. 1)
DEG	DEGREES
DWK	DON'T WALK
F&I	FURNISH AND INSTALL
FL	FLASH/FLASHING
FYA	FLASHING YELLOW ARROW
FYLA	FLASHING YELLOW LEFT ARROW
GLA	GREEN LEFT ARROW
GRN	GREEN INDICATION
GR. RD.	GROUND ROD
GRA	GREEN RIGHT ARROW
GTA	GREEN THRU ARROW
HH	HANDHOLE
IND	INDICATION
INP	INPLACE
INS. GR.	INSULATED GROUND
JB	JUNCTION BOX
LED	LIGHT EMITTING DIODE
LUM	LUMINAIRE
NEU	NEUTRAL
P1-1 (e.g.)	PEDESTRIAN HEAD (PHASE 1, NO. 1)
PB	PUSH BUTTON
PB2-1 (e.g.)	PUSH BUTTON (PHASE 2, NO. 1)
PED	PEDESTRIAN
RED	RED INDICATION
R&S	REMOVE AND SALVAGE
RLA	RED LEFT TURN ARROW
S&I	SALVAGE AND INSTALL
SPR	SPARE
STA	STATION
WLK	WALK INDICATION
YEL	YELLOW INDICATION
YLA	YELLOW LEFT ARROW
YRA	YELLOW RIGHT ARROW

MINNESOTA DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLAN FOR TRAFFIC CONTROL SIGNAL SYSTEM AND ADA IMPROVEMENTS

AT THE INTERSECTION OF: T.H. 51 AT DAN PATCH AVE. / MIDWAY PARKWAY, FALCON HEIGHTS AND ST. PAUL, RAMSEY COUNTY
 STATE PROJ. NO. XXXX-XX
 REF POINT XXX+XX.XXX



PROJECT LOCATION
T.H. 51 AT DAN PATCH AVE.



SYMBOLS

■	HANDHOLE
○	EQ.G CONNECTION
⊣	EVP CONFIRMATORY LIGHT
≡	EVP DETECTOR
≡⊣	EVP DETECTOR AND CONFIRMATORY LIGHT
●	SPLICE
Ⓢ	FIBER OPTIC SPLICE VAULT
Ⓟ	PULL VAULT
⚠	LUMINAIRE NO.
Ⓝ	SIGNAL BASE NO.
Ⓢ-2	SIGNAL HEAD NO./FLASHER HEAD NO.
Ⓢ-4	BARREL MOUNT BASE NO.
Ⓢ-P	WOOD POLE NO.
Ⓢ-TV	TELEVISION CAMERA (CCTV)
Ⓢ-C	TRAFFIC MANAGEMENT CAMERA (TRA MGMT CAM)
Ⓢ-V	VIDEO DETECTION

FOR PLANS AND UTILITIES SYMBOLS SEE TECHNICAL MANUAL

STANDARD PLATES - SIGNAL SYSTEMS

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

PLATE NO.	DESCRIPTION	PLATE NO.	DESCRIPTION
▶ 7020	K CONCRETE CURB (DESIGN B, V, S, DR & BR)	▶ 8122	F PEDESTAL AND PEDESTAL BASE
▶ 7038	A DETECTABLE WARNING SURFACE TRUNCATED DOMES	▶ 8123	G POLE AND MAST ARM
▶ 7100	H CONCRETE CURB & GUTTER (DESIGN B & V)	▶ 8126	L POLE FOUNDATION (PA90 AND PA100)
▶ 7111	J INSTALLATION OF CB CASTINGS (CONCRETE C & G)	▶ 8129	A SHIM AND WASHER
▶ 8000	J CHANNELIZERS A-C	▷ 8130	E SAW CUT LOOP DETECTORS
▷ 8118	D SERVICE EQUIPMENT AND POLE	▷ 8132	B PREFORMED RIGID PVC CONDUIT LOOP DETECTOR
▶ 8119	C GROUND MOUNTED CABINET FOUNDATION		
▷ 8120	Q POLE FOUNDATION (PA-85)		
▶ 8121	H TRANSFORMER BASE AND POLE BASE PLATE		

▶ STANDARD PLATES APPLICABLE TO THIS PROJECT

STATE PROJECT NO. CHARGE IDENTIFIER

6215-106

PLAN REVISIONS		
DATE	SHEET NO.	APPROVED BY

S.A.P. NO. XXX-XXX-XXX

STATE PROJ.NO. XXXX-XX (T.H.36=118)

SHEET NO. 1 OF 15 SHEETS

FED. PROJ. NO. STATE FUNDS

GOVERNING SPECIFICATIONS

THE 2018 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MN MUTCD, INCLUDING FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.

INDEX

1	TITLE SHEET
2	ESTIMATED QUANTITIES
3-9	DETAIL SHEETS
10	INTERSECTION LAYOUT
11	INTERSECTION NOTES
12-13	FIELD WIRING DIAGRAMS
14	SIGNING SHEET
15	UTILITIES LAYOUT

THIS PLAN CONTAINS 15 SHEETS

I HEREBY CERTIFY THAT THIS PLAN 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.

TYPED NAME LIC. NO. XXXXX DATE:

DESIGN SQUAD XXXXX

APPROVED CITY OF ENGINEER DATE:

APPROVED COUNTY ENGINEER DATE:

RECOMMENDED FOR APPROVAL DISTRICT TRANSPORTATION ENGINEER DATE:

RECOMMENDED FOR APPROVAL DATE:

RECOMMENDED FOR APPROVAL DISTRICT TRAFFIC ENGINEER DATE:

RECOMMENDED FOR APPROVAL STATE PRE- LETTING ENGINEER DATE:

OFFICE OF LAND MANAGEMENT APPROVAL DIRECTOR, LAND MANAGEMENT DATE:

APPROVED STATE DESIGN ENGINEER DATE:

DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE WITH STATE AID RULES/POLICY DATE:

APPROVED FOR STATE AID FUNDING: STATE AID ENGINEER DATE:

I HEREBY CERTIFY THAT THE FINAL FIELD REVISIONS, IF ANY, OF THIS PLAN WERE MADE BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINTED NAME: LIC. NO. DATE:

PLOTTED/REVISED: 16-APR-2019

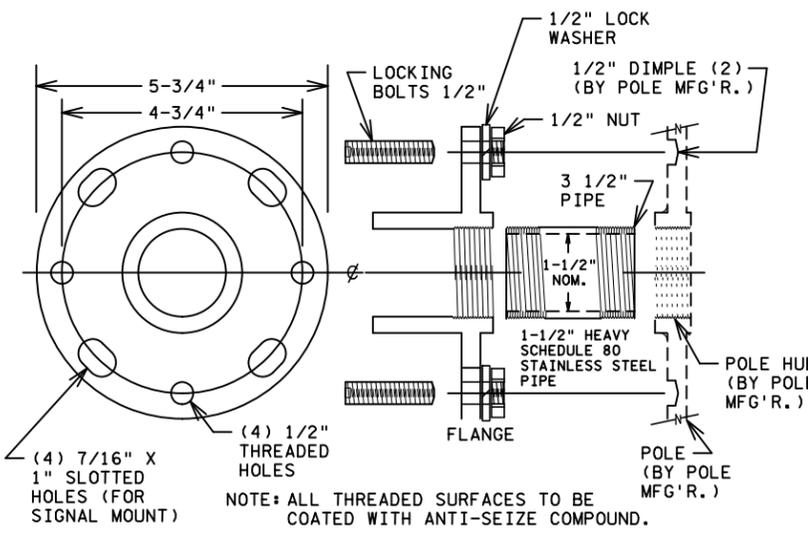
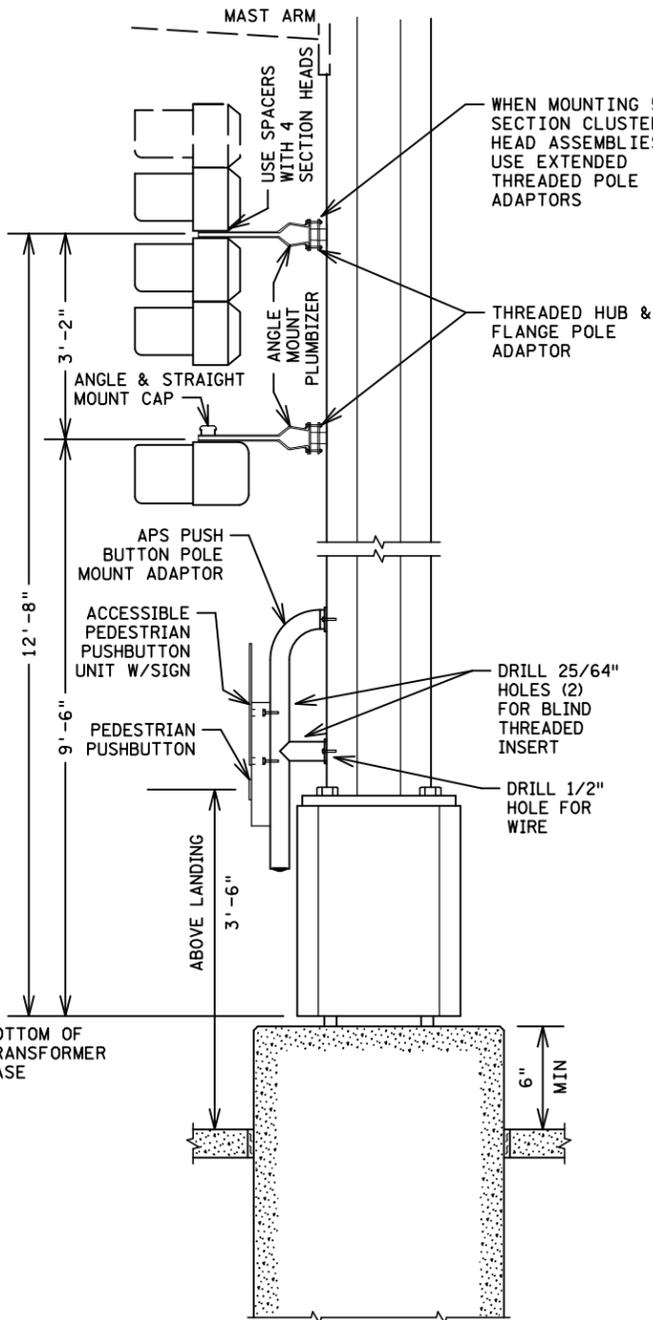
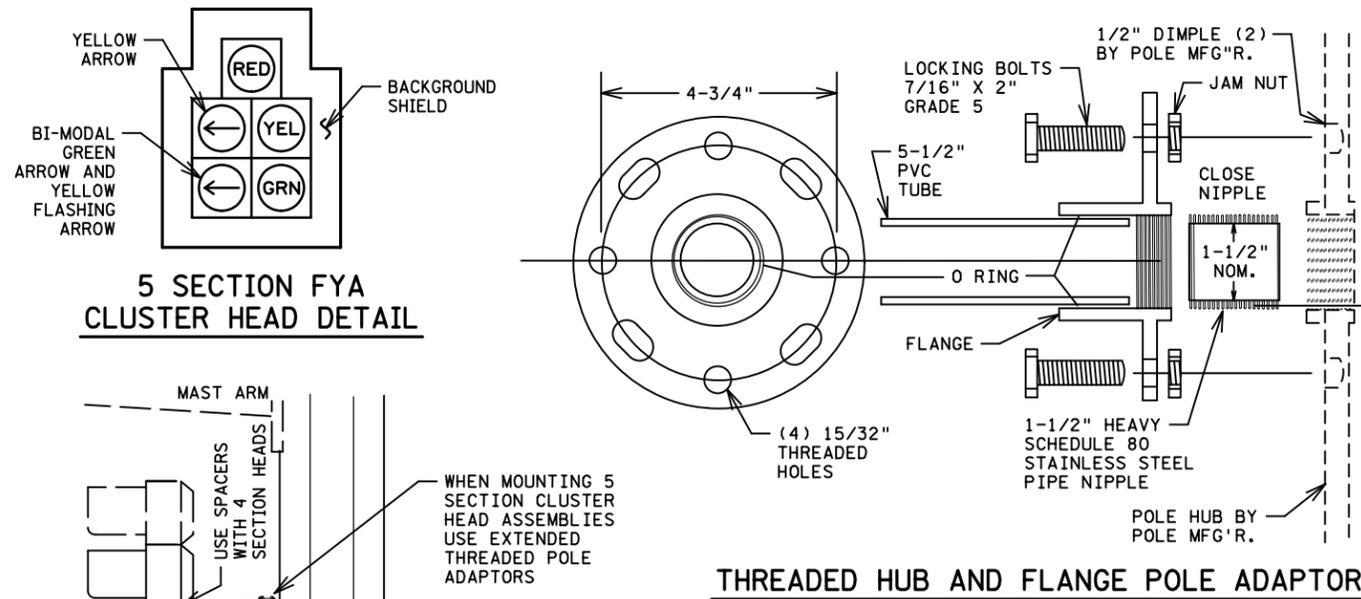
DISTRICT #: Metro
 I/PLOT NAME: I title
 PATH & FILENAME: OTST\Signals\SamplePlan\Camera Sample Plan (4-10-19).dgn

STATEMENT OF ESTIMATED QUANTITIES				COST BREAKDOWN			
ITEM NO.	DESCRIPTION	UNIT	TOTAL ESTIMATED QUANTITIES	STATE SP XXXX-XX	COUNTY SAP XXX-XXX-XXX	FEDERAL SP XXXX-XX	CITY SAP XXX-XXX-XXX
2011.601	AS BUILT	LUMP SUM					
2021.501	MOBILIZATION	LUMP SUM					
2563.601	TRAFFIC CONTROL	LUMP SUM					
2565.501	EMERGENCY VEHICLE PREEMPTION SYSTEM	LUMP SUM					
2565.516	TRAFFIC CONTROL SIGNAL SYSTEM	SYSTEM					

BY	DATE	REVISIONS	SYSTEM ID: XXXXXXXX	T.E. XXXX	STATEMENT OF ESTIMATED QUANTITIES T.H. 51 (SNELLING AVE.) AT DAN PATCH AVE./ MIDWAY PARKWAY IN FALCON HEIGHTS AND ST. PAUL, RAMSEY COUNTY	S.A.P. NO.	DRAWN BY:	CKD BY:	DATE:
			METER ADDRESS: 9999 SNELLING AVE N			CERTIFIED BY _____			
			OLD SYSTEM ID: XXXXX			LICENSED PROFESSIONAL ENGINEER			
						STATE PROJ.NO. XXXX-XX (T.H.51)			SHEET NO. 2 OF 15 SHEETS

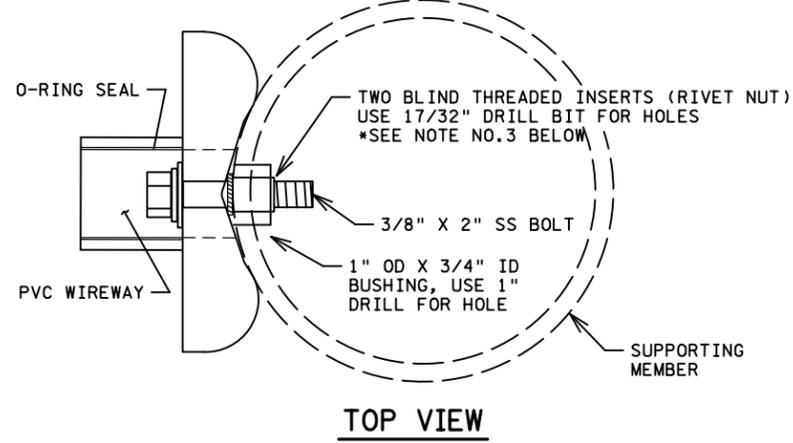
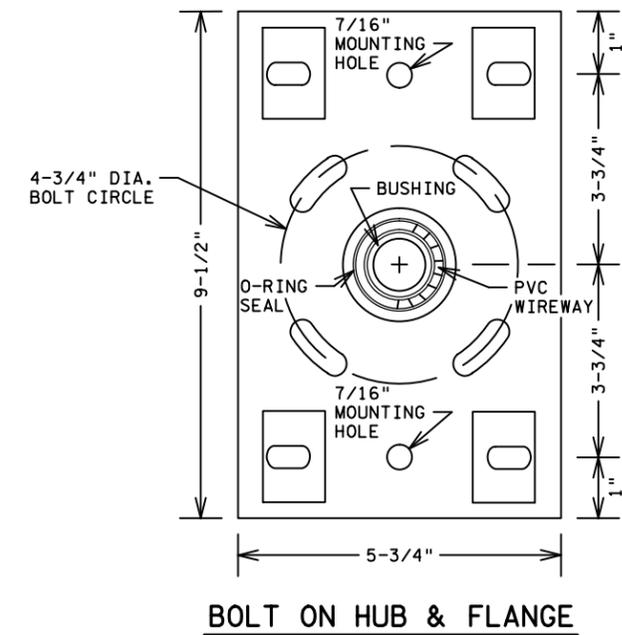
PLOTTED/REVISED: 16-APR-2019

DISTRICT *: Metro
 IPLOT NAME: 3 pole mount detail
 PATH & FILENAME: OT-ST\Signals\SamplePlan\Camera Sample Plan (4-10-19).dgn



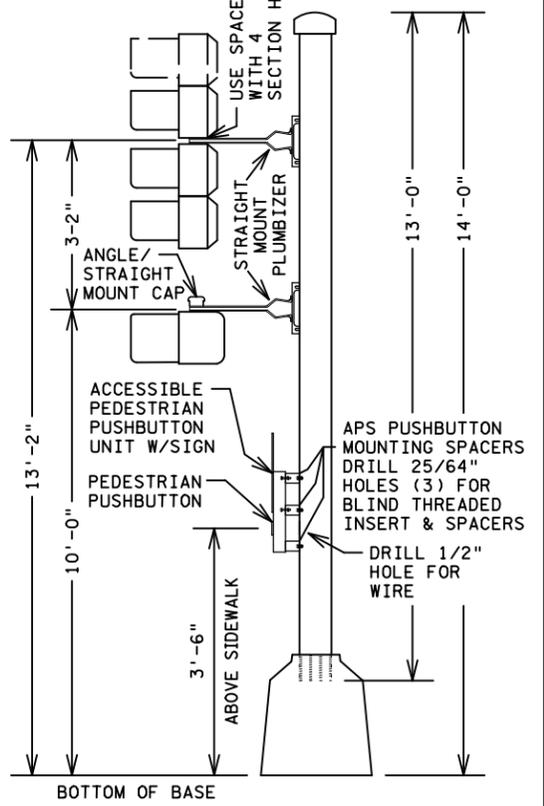
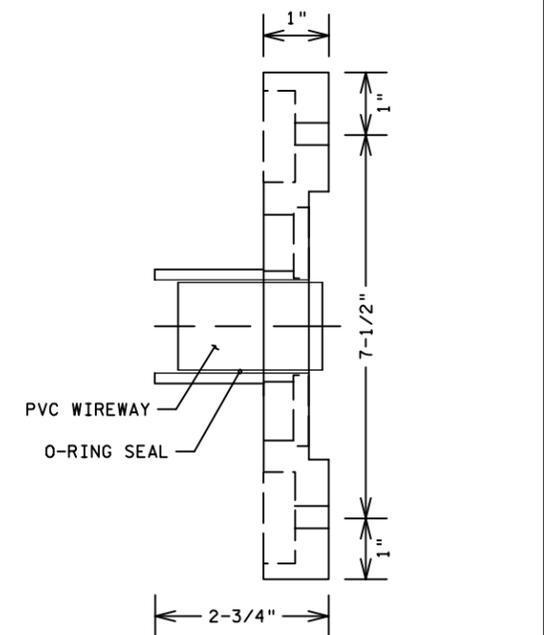
NOTES:

1. ALL THREADED SURFACES TO BE COATED WITH ANTI-SEIZE COMPOUND.
2. USE SIGNAL HEAD MOUNTED SPACERS FOR 4 SECTION POLY HEADS.
3. SEE STANDARD PLATE NUMBER 8123 FOR ADDITIONAL SIGNAL POLE DETAILS.
4. EXTENDED THREADED POLE ADAPTOR ONLY USED WITH 5 SECTION CLUSTER HEADS.



NOTES:

1. ALL THREADED SURFACES TO BE COATED WITH ANTI-SEIZE COMPOUND.
2. USE SIGNAL HEAD MOUNTED SPACERS FOR 4 SECTION POLY HEADS.
3. BLIND THREADED INSERTS (RIVET NUT) MUST BE INSERTED USING MANUFACTURERS SPECIFIC INSERTION TOOL. NO OTHER METHOD IS ACCEPTABLE.
4. SEE STANDARD PLATE NUMBER 8122 FOR ADDITIONAL PEDESTAL POLE DETAILS.



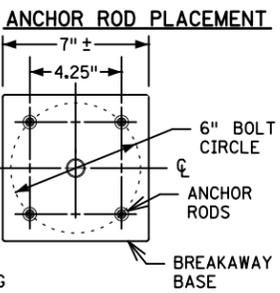
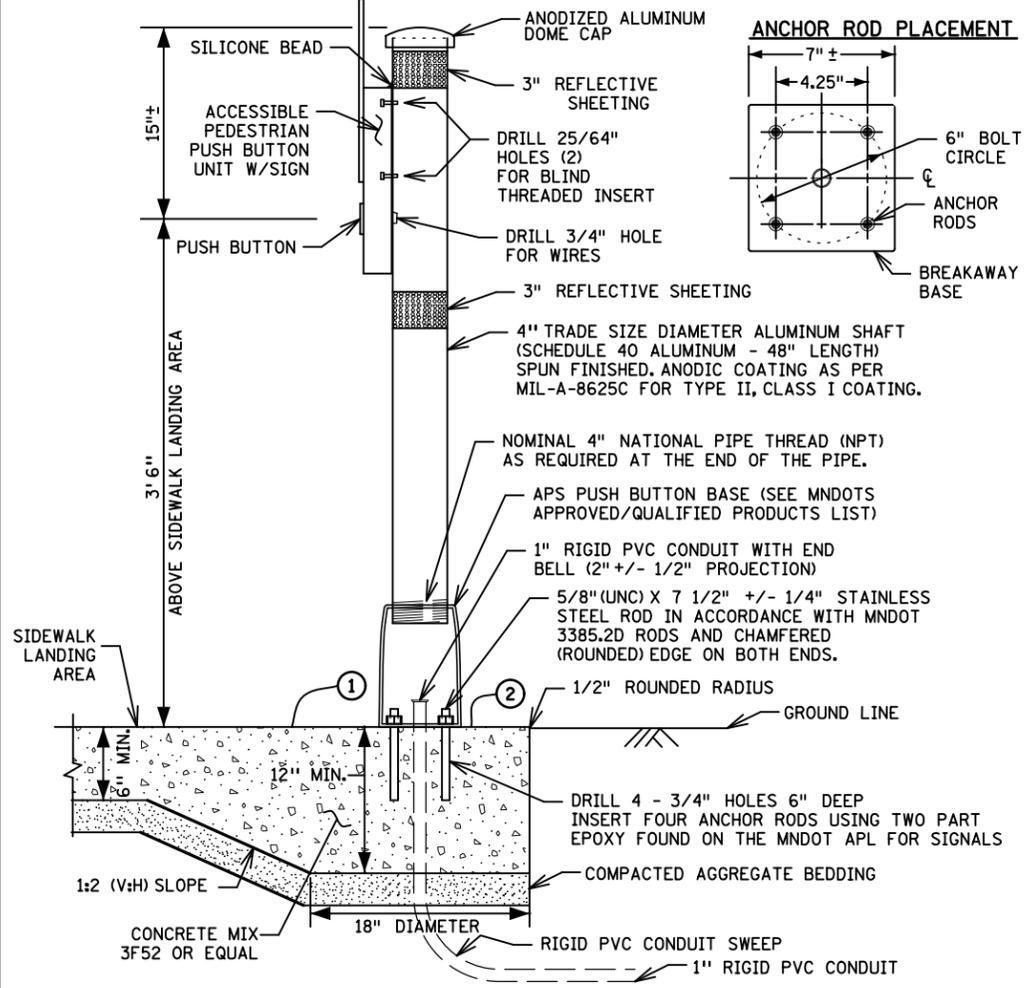
NOT TO SCALE

BY	DATE	REVISIONS

POLE MOUNT DETAIL

S.A.P. NO.	DRAWN BY:	CKD BY:	DATE:
CERTIFIED BY _____	LIC. NO. _____	DATE: _____	
STATE PROJ.NO. XXXX-XX (T.H.51)		SHEET NO. 3 OF 15 SHEETS	

APS PUSH BUTTON STATION



NOTES:

PLACEMENT AND ORIENTATION OF THE PUSH BUTTON STATION IS CRITICAL. MOUNT THE BUTTON SO THAT THE FACE IS PARALLEL WITH THE ASSOCIATED CROSSWALK. SCREW IN SHAFT TO A TIGHTENED POSITION BEFORE MOUNTING ACCESSIBLE PEDESTRIAN PUSH BUTTON UNIT TO THE SHAFT.

ORIENT ACCESS OPENING ON THE BREAKAWAY PEDESTAL DIRECTLY BELOW THE APS BUTTON.

PLUMB THE PUSH BUTTON STATION WITH LEVELING SHIMS IN ACCORDANCE WITH STANDARD PLATE 8129.

INSTALL BLIND THREADED INSERTS USING MANUFACTURER'S SPECIFIC INSERTION TOOL.

USE ZINC PLATED STEEL 1/4 - 20 UNC BLIND THREADED INSERTS SUITABLE FOR MOUNTING ON SURFACE WALL THICKNESS OF .337. APPROVED BLIND INSERTS ARE LISTED ON MNDOT'S APPROVED/QUALITY PRODUCTS LIST WEBSITE FOR TRAFFIC SIGNALS.

USE APS 1/4 - 20 STAINLESS STEEL MOUNTING BOLTS. APPLY BRUSH ON ANTI SEIZE COMPOUND TO BOLTS PRIOR TO ASSEMBLY.

APPLY A BEAD OF 100% SILICONE SEALANT ALONG THE TOP OF THE PUSH BUTTON UNIT WHERE IT COMES IN CONTACT WITH THE 4\"/>

USE WHITE REFLECTIVE SHEETING AT INTERSECTION CORNERS AND YELLOW REFLECTIVE SHEETING IN CENTER MEDIANS. APPROVED TUBE DELINEATOR SHEETING IS LISTED ON MNDOT'S APPROVED/QUALIFIED PRODUCTS LIST WEBSITE FOR SIGNING.

AN 18\"/>

① THE PUSH BUTTON STATION FOUNDATION IS MONOLITHIC (POURED AT ONE TIME) WITH THE SIDEWALK. PROVIDE A 1:2 (V:H) SLOPE GRADE WHERE THE 6\"/>

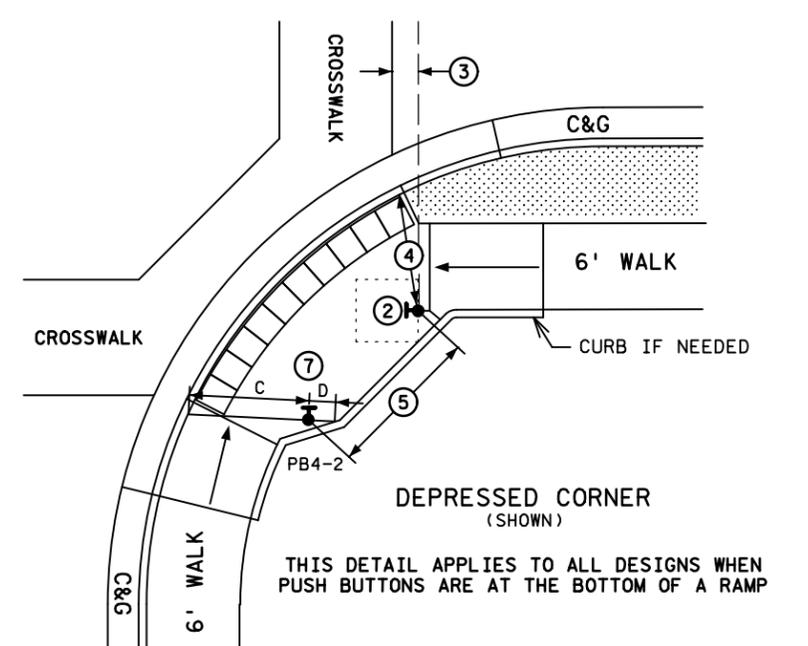
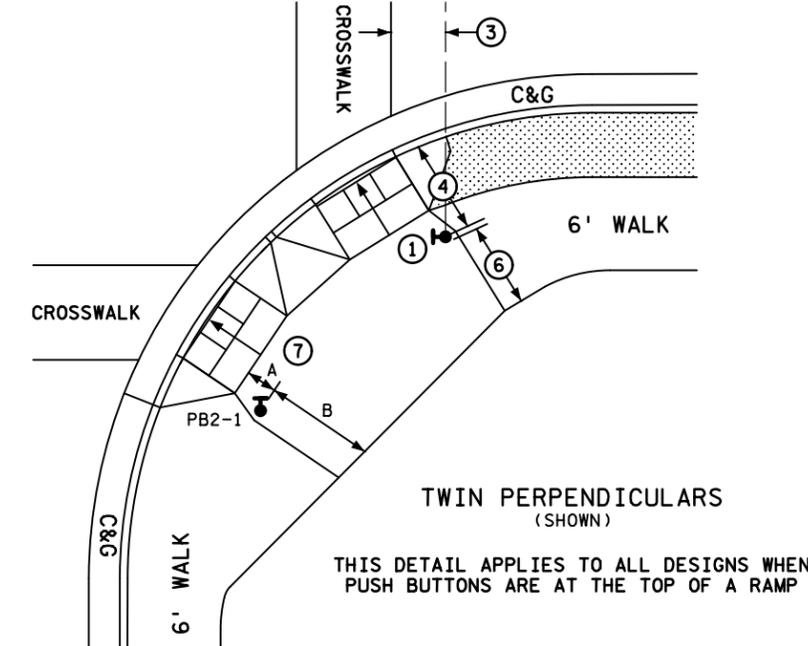
② ENSURE CONCRETE CONTROL JOINTS AND EDGE OF CONCRETE WALK ARE A MINIMUM 9\"/>

TYPICAL APS PEDESTRIAN PUSH BUTTON LOCATION

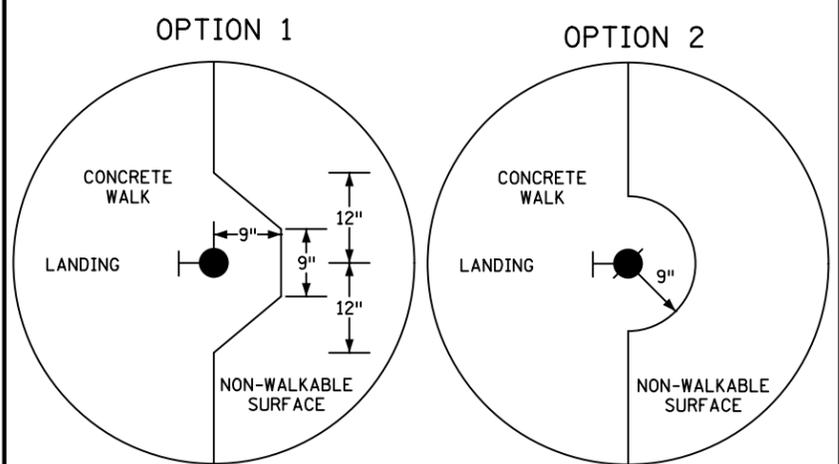
THIS IS A GENERAL DETAIL INTENDED TO SHOW THE REQUIREMENTS OF APS PUSH BUTTON LOCATION. FOR PROJECT SPECIFIC INFORMATION REGARDING PEDESTRIAN RAMP LAYOUT AND PUSH BUTTON LOCATIONS, SEE THE PLAN.

SUPPLEMENTAL GUIDANCE FOR CONSTRUCTING COMPLIANT APS PUSH BUTTONS:

- ① THE FACE OF THE BUTTON SHALL BE PARALLEL WITH THE OUTSIDE EDGE OF CROSSWALK.
- ② A MINIMUM 4 FT X 4 FT LANDING AREA SHALL BE PROVIDED ADJACENT TO EACH BUTTON, WITH A 2 PERCENT MAXIMUM SLOPE IN ALL DIRECTIONS.
- ③ BUTTONS SHALL BE WITHIN 5 FT OF THE OUTSIDE EDGE OF THE CROSSWALK.
- ④ BUTTONS SHALL BE BETWEEN 1.5 FT AND 10 FT FROM THE BACK OF CURB OR EDGE OF ROADWAY, MEASURED IN THE DIRECTION OF TRAVEL. STANDALONE PUSH BUTTON STATIONS SHOULD BE 4' MINIMUM FROM THE BACK OF CURB TO AVOID KNOCKDOWNS.
- ⑤ BUTTONS SHALL BE AT LEAST 10 FT APART.
- ⑥ PROVIDE A MAINTENANCE ACCESS ROUTE (MAR) WHEREVER POSSIBLE FOR SNOW REMOVAL PURPOSES. A MAR REQUIRES A 6 FT MINIMUM CLEAR DISTANCE BETWEEN A PUSH BUTTON AND ANY OBSTRUCTIONS, INCLUDING BUILDINGS, V-CURB, ELECTRICAL FOUNDATIONS, SIGNAL CABINETS, OR ANOTHER PUSH BUTTON.
- ⑦ BUTTON SHOULD BE 2 FT MINIMUM FROM RAMP GRADE BREAK AND BACK OF WALK.



CONTRACTOR MUST USE OPTION 1 OR 2 WHEN THE APS PUSH BUTTON IS SHOWN AT THE EDGE OF WALK. OPTION USED (OR SELECTED) MUST BE THE SAME THROUGHOUT THE ENTIRE PROJECT.



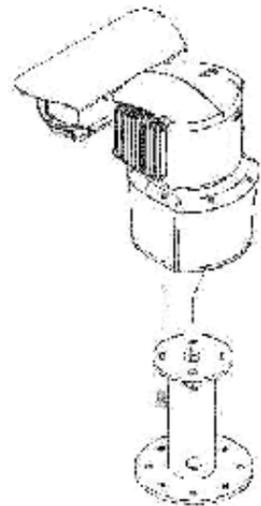
SIGNAL CONTROL POINTS			DISTANCE TO FRONT OF LANDING (FT)	DISTANCE TO BACK OF LANDING (FT)
SIGNAL NO.	X	Y		
PB2-1	-	-	A	B
PB4-2	-	-	C	D

- A - DISTANCE MEASURED FROM THE PUSH BUTTON TO THE FRONT OF LANDING/TOP OF RAMP
- B - CLEAR DISTANCE MEASURED FROM THE PUSH BUTTON TO THE BACK OF LANDING/EDGE OF WALK
- C - CLEAR DISTANCE MEASURED FROM THE PUSH BUTTON TO THE OUTSIDE EDGE OF DOMES IN THE DIRECTION OF TRAVEL
- D - CLEAR DISTANCE FROM THE PUSH BUTTON TO THE BACK OF LANDING MEASURED IN THE OPPOSITE DIRECTION OF TRAVEL

DISTRICT #: Metro
 I/PLOT NAME: 4 APS pb detail
 PATH & FILENAME: OT-ST-Signals\SamplePlan\Camera Sample Plan (4-10-19).dgn
 PLOTTED/REVISED: 16-APR-2019

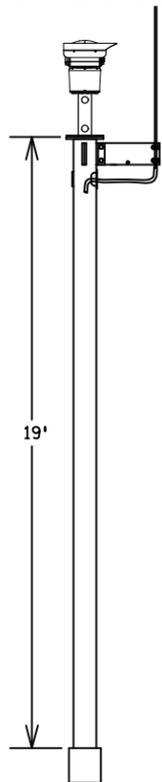
ISOMETRIC VIEW- CAMERA & MOUNT

(STATE FURNISHED)



X-400 CAMERA EXTENSION

(USED WHEN A LUMINAIRE IS NOT REQUIRED)



X6-350/CAM 400 EXTENSION

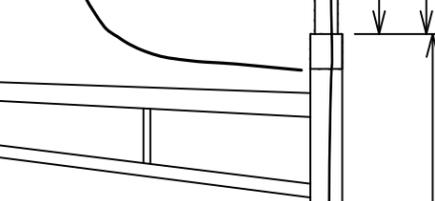
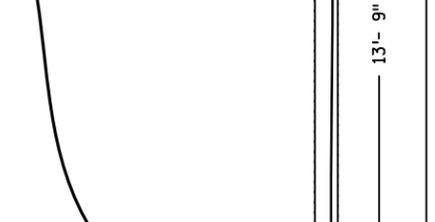
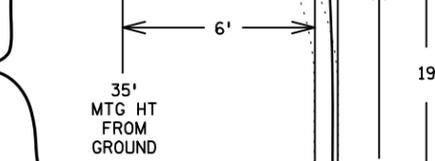
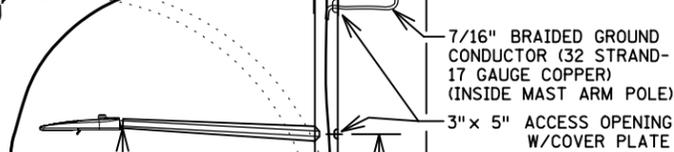
INSTALL CAMERA & MOUNT (STATE FURNISHED)

LIGHTNING ROD & LIGHTNING ROD PLATE

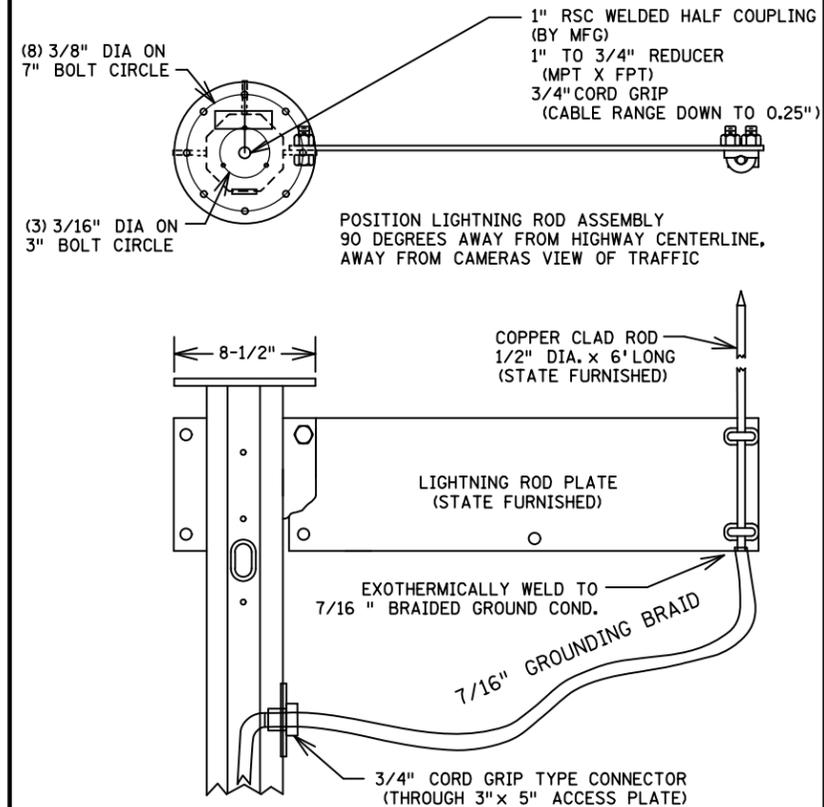
THE TYPICAL D40-9 LUMINAIRE EXTENSION IS NOT USED WHEN THE X6-350/CAM 400 EXTENSION IS REQUIRED

F&I LUMINAIRE/ CAMERA EXTENSION (GALVANIZED, UN-PAINTED). (INCLUDES: LIGHTNING ROD PLATE, AND LIGHTNING ROD.

F&I BRAIDED GROUND, GROUND ROD, EXOTHERMIC WELDS AND ANY OTHER MISC. ITEMS REQUIRED)



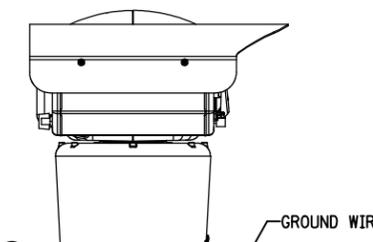
EXTENSION TOP & LIGHTNING PROTECTION DETAIL



- NOTES:**
- 1) FURNISH & INSTALL 7/16" BRAIDED GROUND CONDUCTOR INSIDE MAST ARM POLE AND THROUGH INPLACE CONDUIT TO CLOSEST HANDHOLE (SEE LAYOUT).
 - 2) CONTRACTOR SHALL EXOTHERMICALLY WELD 7/16" BRAIDED GROUND WIRE TO GROUND ROD IN HANDHOLE.
 - 3) NO SPLICES ALLOWED IN 7/16" BRAIDED GROUND WIRE.
 - 4) CONTRACTOR SHALL CUT A 3/4 INCH KNOCK OUT HOLE IN THE INSPECTION PLATE NEAR THE CAMERA AND PLACE A 3/4 INCH CORD GRIP TYPE FITTING TO RUN THE 7/16 INCH BRAIDED GROUND CONDUCTOR INTO THE POLE.

CAMERA & MOUNT AT TOP OF EXTENSION

IP CAMERA (STATE FURNISHED)



- F&I MOUNTING BOLTS W/ANTI-SEIZE
- (4) 5/16" x 1-1/4" STAINLESS STEEL BOLTS
 - (4) 5/16" STAINLESS STEEL NUTS
 - (8) 5/16" STAINLESS STEEL FLAT WASHERS
 - (3) 5/16" STAINLESS STEEL LOCK WASHERS
 - (1) 5/16" STAINLESS STEEL INTERNAL TOOTH LOCK WASHER

1" TO 3/4" REDUCER (MPT X FPT)
3/4" CORD GRIP (CABLE RANGE DOWN TO 0.25")

IN TOP OF LUMINAIRE/ CAMERA EXTENSION

2) CAT 5E CABLE 600V RATED

7/16" BRAIDED GROUND CONDUCTOR (32 STRAND-17 GAUGE COPPER)

- F&I CAT 5E (600V RATED) (WITH THE PROPER TERMINATIONS) FROM THE TOP OF THE POLE TO THE SIGNAL CABINET. (NOT TO EXCEED 250' LENGTH)
- F&I 7/16" BRAIDED GROUND CONDUCTOR (32 STRAND 17 GAUGE COPPER) FROM LIGHTNING ROD TO THE GROUND ROD IN HANDHOLE

7/16" BRAIDED GROUND CONDUCTOR (32 STRAND 17 GAUGE COPPER)

HANDHOLE (SEE LAYOUT)

EXOTHERMIC WELD

5/8" X 15' GROUND ROD

REQUIRED CABLE TERMINATION:
COM CABLE- CAT 5E (600V RATED)
-RJ-45 (T-568B)

PROPOSED SIGNAL CONTROL CABINET (STATE FURNISHED OR INPLACE)

- STATE FURNISHED & INSTALLED:
- CAMERA POWER OVER ETHERNET (POE) INJECTOR
 - PATCH CORDS
 - SIGNAL CONTROLLER
 - MMU
 - ETHERNET SWITCH

F/I CAT 5E (600V RATED) (TO CAMERA AT THE TOP OF THE POLE)

CONDUITS (SEE LAYOUT)

HANDHOLE

CORE DRILL FOR CONDUIT WHERE REQUIRED

CONDUIT W/6-SM F/O PIGTAIL SEE TMS PLAN

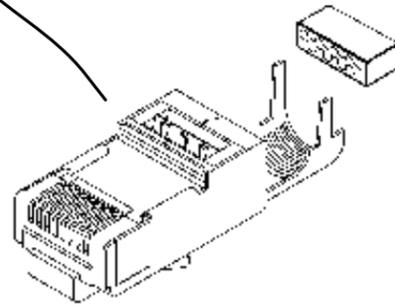
- 1) THE CAMERA IS SUPPLIED WITH 20" CABLE PIGTAIL. IT IS TERMINATED WITH A RJ45 PLUG AS INDICATED ON THE IP CAMERA CONNECTOR DETAIL SHEET.
- 2) F&I ETHERNET CABLE IN ACCORDANCE WITH 3815.2C.6.d (CAT 5E -600V RATED), BETWEEN THE SIGNAL CONTROL CABINET AND THE TOP OF THE POLE. TERMINATE THE ENDS OF THE CABLE WITH RJ-45 (T-568B) CONNECTORS. ALL FIELD TERMINATIONS/CONNECTORS SHALL BE INSTALLED AS RECOMMENDED BY THE MANUFACTURER USING THE SPECIFIED INSTALLATION TOOL(S).

DISTRICT #: Metro
 PLOT NAME: 5 lum & cam ext detail
 PATH & FILENAME: OT-ST-Signals\SamplePlan\Camera Sample Plan (4-10-19).dgn
 PLOTTED/REVISED: 16-APR-2019

BY	DATE	REVISIONS	LUMINAIRE/CAMERA EXTENSION DETAIL TYPE X6-350/CAM400 LUMINAIRE EXTENSION AND X-400 CAMERA EXTENSION		S.A.P. NO.	DRAWN BY:	CKD BY:	DATE:
					CERTIFIED BY _____	LIC. NO. _____		
					STATE PROJ.NO. XXXX-XX (T.H.51)		SHEET NO. 5 OF 15 SHEETS	

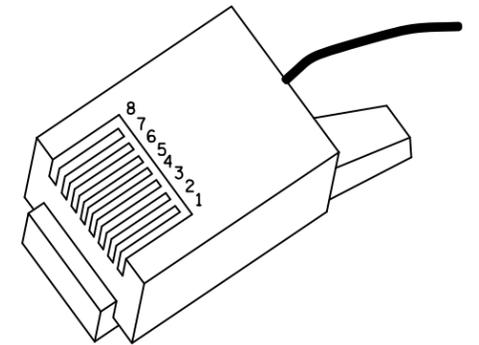
CAT 5E (600V RATED) CABLE TERMINATION

F&I RJ45 CABLE TERMINATION - FOR HIGH SPEED APPLICATION.
 CAT 6 SHIELDED MODULAR PLUG, RJ45 (8 CONDUCTOR), GOLD PLATED CONTACTS, AND MUST ACCEPT CABLES WITH DIAMETERS UP TO 0.310 INCHES.
 MUST MEET OR EXCEED CATERGORY 6 ANSI/EIA 568-C.2
 L-COM PART NO. TSP8048C5S MEETS THESE REQUIREMENTS

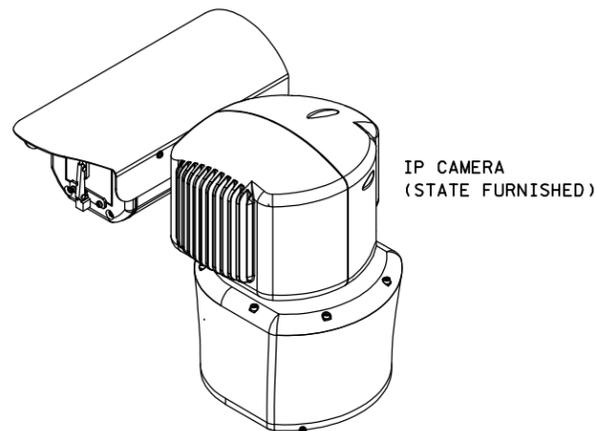


WATERPROOF SHIELDED RJ-45 (MALE TO MALE) INLINE COUPLER/ADAPTOR

I.P. RATING: IP67
 CONTACT MATERIAL: COPPER ALLOY
 CONTACT PLATING: GOLD
 HOUSING MATERIAL: NYLON
 AMPHENOL PART NO. RDP-OOBFFA-SLM7001 &
 VPI PART NO. CAT5E-WTP-FF
 MEET THESE REQUIREMENTS

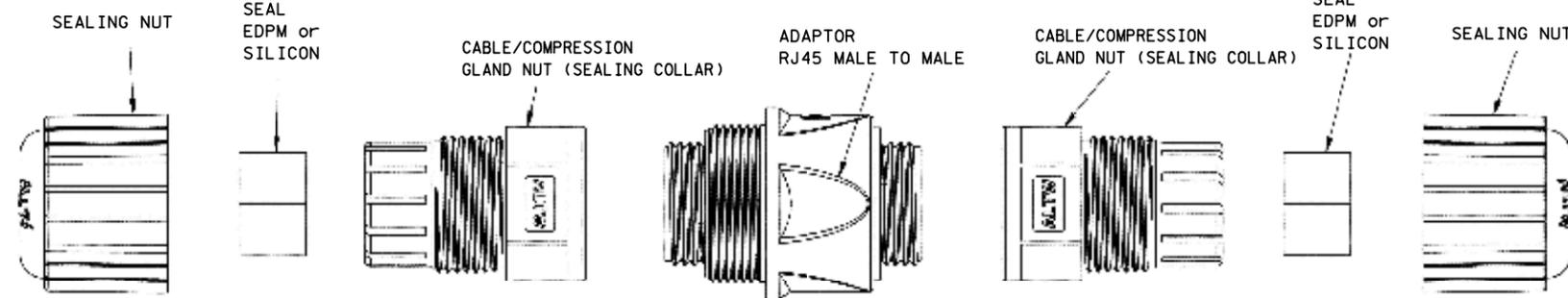


1	2	3	4	5	6	7	8
WHITE/ORANGE	ORANGE	WHITE/GREEN	BLUE	WHITE/BLUE	GREEN	WHITE/BROWN	BROWN
CAT 6 RJ-45 PLUG							
T-568B							



IP CAMERA
(STATE FURNISHED)

FACTORY INSTALLED 20" PIGTAIL
WITH CONNECTOR (RJ-45 PLUG)



ETHERNET CABLE 4/PR

RJ-45 PLUG (T-568B)
(SUPPLIED WITH CAMERA)



F&I RJ-45 IN-LINE COUPLER/ADAPTER
(MALE PLUG TO MALE PLUG)
SHALL MEET IP-67 REQUIREMENTS
SEE DETAIL ABOVE FOR MORE
INFORMATION.

F&I RJ45 CABLE
TERMINATION (CONNECTOR)
SEE DETAIL ABOVE FOR
MORE INFORMATION.

F&I RJ45 CABLE
TERMINATION (CONNECTOR)
SEE DETAIL ABOVE FOR
MORE INFORMATION.

F&I ETHERNET CABLE IN ACCORDANCE WITH 3815.2C.6.d
(CAT 5E 600V RATED), BETWEEN THE SIGNAL CONTROL
CABINET AND THE TOP OF THE SIGNAL POLE. TERMINATE
THE ENDS OF THE CABLE WITH RJ-45 (T-568B) CONNECTORS.
ALL FIELD TERMINATIONS/CONNECTORS SHALL BE INSTALLED
AS RECOMMENDED BY THE MANUFACTURER, AND USING THE
SPECIFIED INSTALLATION TOOL(S).

CONNECTOR LOCATED IN
THE SIGNAL CABINET

CONNECTORS LOCATED AT THE
TOP OF THE SIGNAL POLE
(IN CAMERA MOUNT)

PLOTTED/REVISED: 16-APR-2019

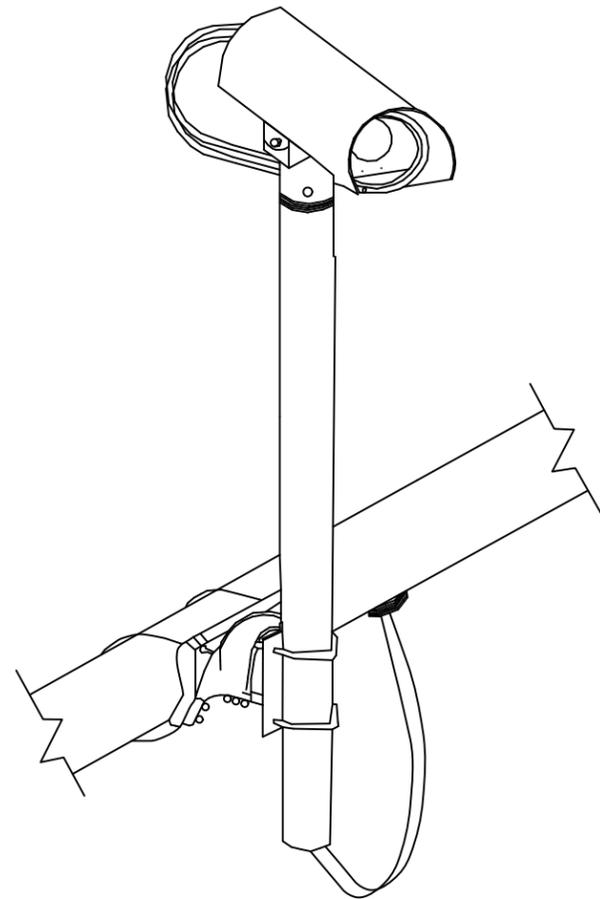
DISTRICT *: Metro
 IPLOT NAME: 6 cam connector detail
 PATH & FILENAME: OT-ST_Signals\SamplePlan\Camera Sample Plan (4-10-19).dgn

BY	DATE	REVISIONS

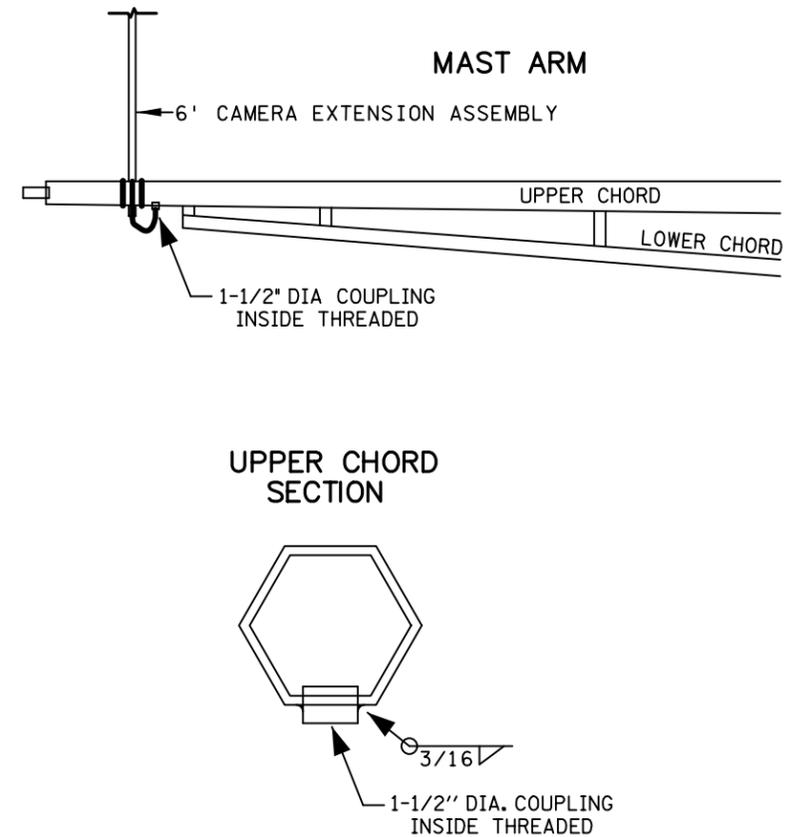
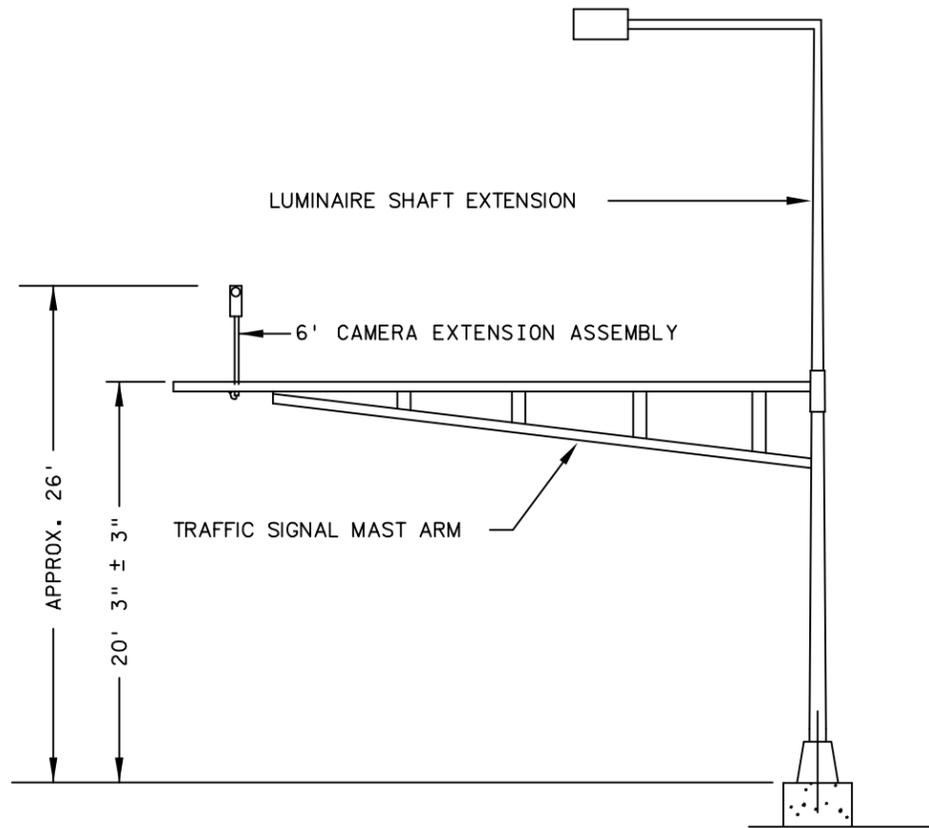
IP CAMERA CONNECTORS DETAIL

S.A.P. NO.	DRAWN BY:	CKD BY:	DATE:
CERTIFIED BY _____	LIC. NO. _____	DATE: _____	
STATE PROJ.NO. XXXX-XX (T.H.51)		SHEET NO. 6 OF 15 SHEETS	

TYPICAL MAST ARM CAMERA MOUNTING DETAILS

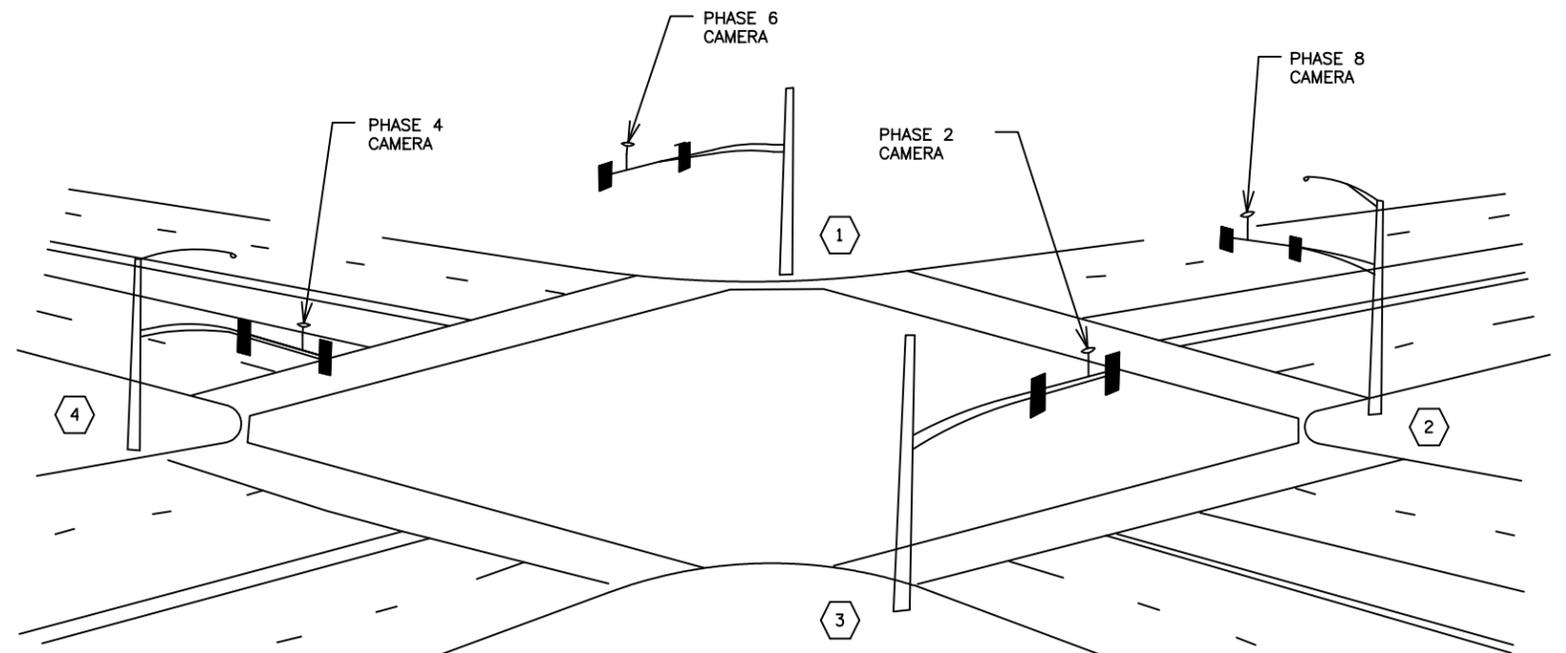


MAST ARM CAMERA INSTALLATION



NOTES:

- 1) ALL VIDEO CAMERA DETECTION EQUIPMENT IS STATE FURNISHED (ITERIS NEXT) AND INSTALLED BY CONTRACTOR (SEE SPECIAL PROVISIONS).
- 2) CABLES FOR CAMERA OPERATION SHALL BE AS INDICATED IN THE SPECIAL PROVISIONS AND SHALL BE IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF THE MANUFACTURER OF THE VIDEO DETECTION SYSTEM USED.
- 3) WHERE THE CABLES ARE ROUTED THROUGH THE MAST ARM, PROVIDE BUSHINGS TO PROTECT THE CABLES.
- 4) THE 6-FOOT CAMERA MOUNTING EXTENSION ASSEMBLY SHALL CONSIST OF A MAST ARM MOUNTING BRACKET THAT IS CONSTRUCTED OF CAST ALUMINUM. THE MAST ARM MOUNTING BRACKET SHALL BE ATTACHED TO THE MAST ARM WITH STAINLESS STEEL STRAPS, USING STAINLESS STEEL MOUNTING HARDWARE.
- 5) A 1 1/2" HALF COUPLING, 1 1/2" PIPE NIPPLE AND CONDUIT OUTLET BODY FOR CAMERA CABLES SHALL BE F&I ON THE UNDER SIDE OF MAST ARM SEE SIGNAL LAYOUT FOR LOCATION OF HUB.



**TYPICAL INTERSECTION LAYOUT USING CAMERAS
(DRAWING NOT TO SCALE)
(SYSTEM A SHOWN)**

PLOTTED/REVISED: 16-APR-2019

DISTRICT #: Metro
PLOT NAME: 7 cam mount detail
PATH & FILENAME: OT-ST-Signals\SamplePlan\Camera Sample Plan (4-10-19).dgn

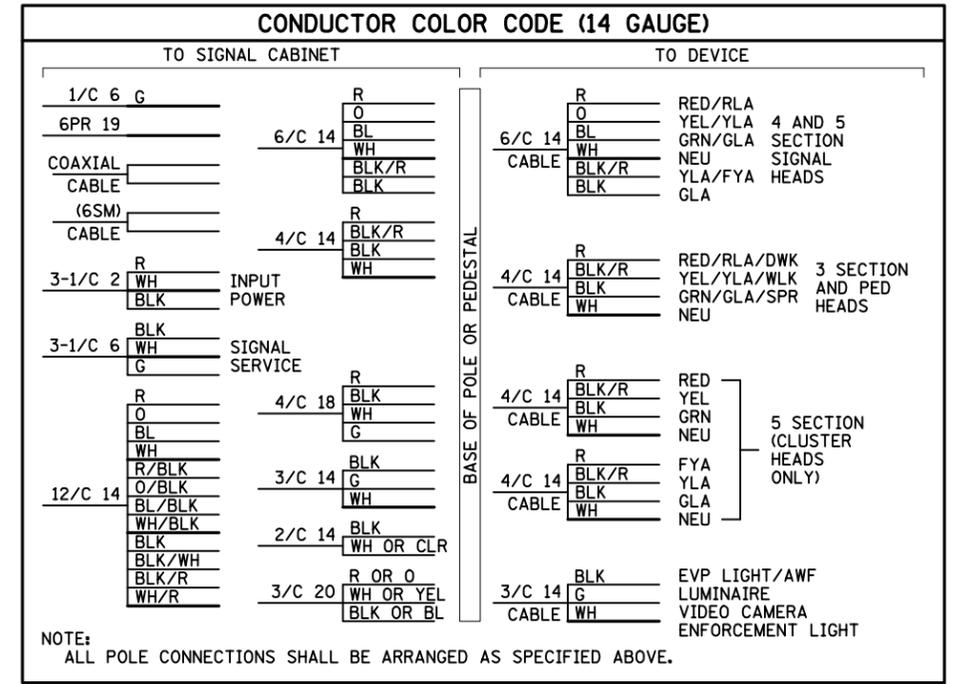
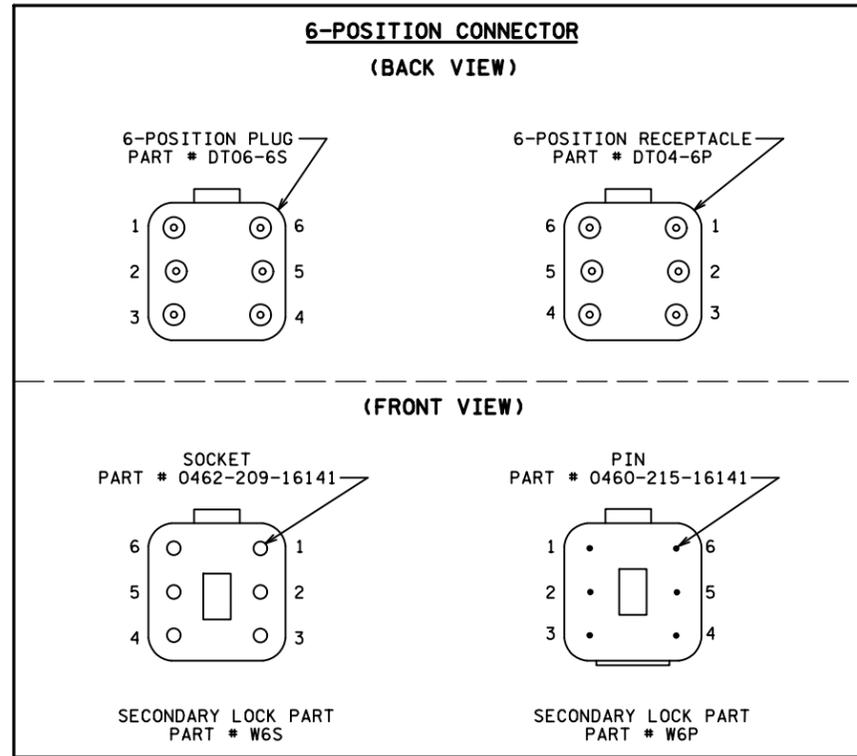
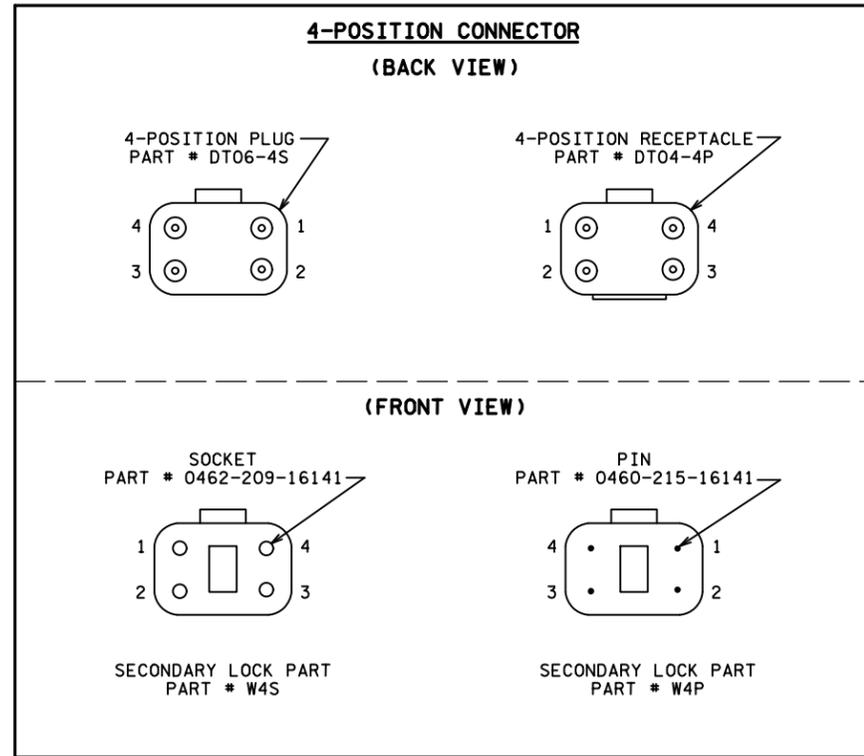
BY	DATE	REVISIONS

**TYPICAL MAST ARM
CAMERA MOUNTING DETAIL**

S.A.P. NO.	DRAWN BY:	CKD BY:	DATE:
CERTIFIED BY _____ <small>LICENSED PROFESSIONAL ENGINEER</small>	LIC. NO. _____	DATE: _____	
STATE PROJ. NO. XXXX-XX (T.H.51)		SHEET NO. 7 OF 15 SHEETS	

PLOTTED/REVISED: 16-APR-2019

DISTRICT #: Metro
 IPLOT NAME: 8 wire connector detail
 PATH & FILENAME: OT-ST-Signals\SamplePlan\Camera Sample Plan (4-10-19).dgn



4 Position DT Connector (3 Section Head/DWK/WLK)			
Wire to Control Cabinet	Connector pin #	Wire to Signal Indication	Signal Indication
R or R/BLK or BLK	1	R	RED or DWK
O or O/BLK or BLK/WH or BLK	2	BLK/R	YEL or WLK
BL or BL/BLK or BLK/R or BLK	3	BLK	GRN or SPR
WH or WH/BLK or WH/R	4	WH	NEU

6 Position DT Connector (4 and 5 Section Heads)			
Wire to Control Cabinet	Connector pin #	Wire to Signal Indication	Signal Indication
R	1	R	RED
O	2	O	YEL
BL	3	BL	GRN
WH	4	WH	NEU
O/BLK or BLK/R (6/C)	5	BLK/R	YLA or FYLA
BL/BLK or BLK (6/C)	6	BLK	GLA

4 Position DT Connector (EVP LHT/LUM/AWF/VID CAM/ENF LHT) (Used with 3 Conductor Cable Only)			
Wire to Control Cabinet	Connector pin #	Wire to Signal Indication	Signal Indication
BLK	1	BLK	EVP LHT or LUM or RED or YEL or VID CAM or ENF LHT or AWF
(Not Used)	2	(Not Used)	(Not Used) (See Note #8)
G	3	G	EQ.G
WH	4	WH	NEU

WIRE COLOR CODE KEY	
R	Red
O	Orange
BL	Blue
WH	White
BLK	Black
BRN	Brown
CL	Clear
G	Green
R/BLK	Red with Black Stripe
O/BLK	Orange with Black Stripe
BL/BLK	Blue with Black Stripe
WH/BLK	White with Black Stripe
WH/R	White with Red Stripe
BLK/WH	Black with White Stripe
BLK/R	Black with Red Stripe

4 Position DT Connectors (Use Two Connectors for 5 Section FYA Cluster Heads)			
12 Conductor Wire to Control Cabinet	Connector pin #	4 Conductor to Signal Indication	Signal Indication
R	1	R	RED
O	2	BLK/R	YEL
BL	3	BLK	GRN
WH	4	WH	NEU
R/BLK	1	R	FYA
O/BLK	2	BLK/R	YLA
BL/BLK	3	BLK	GLA
WH/BLK	4	WH	NEU

WIRE SPECIFICATION CHART		
Type	Name	Specification Number
1/C 2	Power Conductors	3815.2B.1
1/C 6	Power Conductors	3815.2B.1
1/C 6 INS.GR.	Grounding Conductors	3815.2B.5
2/C 14	Loop Detector Lead-In Cable	3815.2C.4
3/C 14	Signal Control Cable	3815.2C.3
4/C 14	Signal Control Cable	3815.2C.3
6/C 14	Signal Control Cable	3815.2C.3
12/C 14	Signal Control Cable	3815.2C.3
6PR 19	Telephone Cables Outdoor	3815.2C.6.b
3/C 20	EVP Detector Cable	3815.2C.5

NOTES:

- DT04-P RECEPTACLE SHALL BE TERMINATED TO THE WIRING HARNESS RUNNING FROM THE BASE/JUNCTION BOX OF THE POLE TO SIGNAL INDICATIONS.
- DT06-S PLUG SHALL BE TERMINATED TO THE CABLES RUNNING FROM THE TRAFFIC SIGNAL CABINET TO THE BASE/JUNCTION BOX OF THE POLE.
- THERE SHALL BE A MINIMUM OF 24 INCHES OF SLACK ON EACH CABLE IN EVERY POLE BASE /JUNCTION BOX.
- STRIP A MAXIMUM OF 6 INCHES OF THE OUTER JACKET OF EACH SIGNAL CABLE.
- STRIP .250 INCHES OF INSULATION FROM EACH INDIVIDUAL CONDUCTOR.
- CRIMP PINS OR SOCKETS USING RATCHETING TYPE CRIMPING TOOL HDT-48-00. NO OTHER CRIMPING TOOL WILL BE ALLOWED.
- WIRES MUST BE TERMINATED AS DETAILED IN TABLES DEPENDING ON WIRE COUNT.
- ANY UNUSED PIN MUST HAVE A SEALING PLUG PLACED IN BOTH THE PLUG & RECEPTACLE (PART # 114017).
- LABEL EACH HALF OF THE CONNECTOR (PLUG AND RECEPTACLE) WITH THE DEVICE DESIGNATION (AS INDICATED IN THE WIRING DIAGRAM) USING A PERMANENT BLACK MARKER.

BY	DATE	REVISIONS

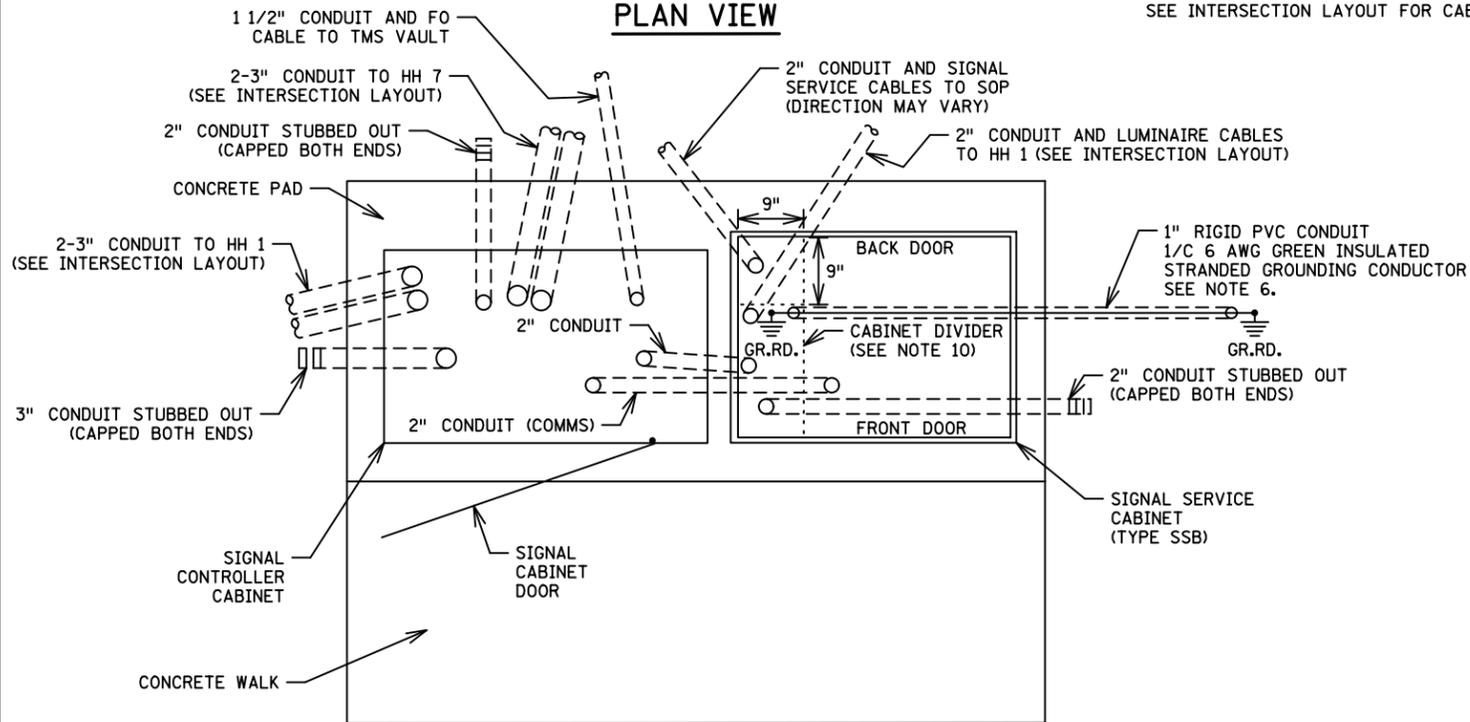
TRAFFIC SIGNAL POLE WIRING CONNECTOR DETAIL

S.A.P. NO.	DRAWN BY:	CKD BY:	DATE:
CERTIFIED BY _____	LIC. NO. _____	DATE: _____	
STATE PROJ. NO. XXXX-XX (T.H.51)		SHEET NO. 8 OF 15 SHEETS	

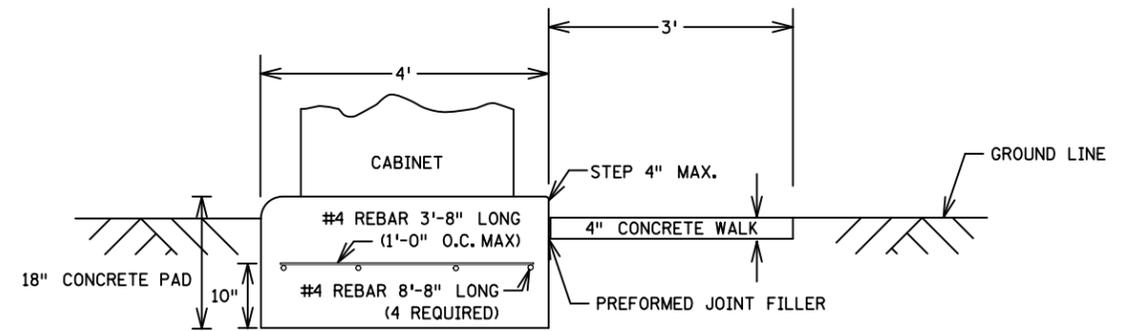
TYPICAL PAD WITH CONTROLLER CABINET AND SERVICE CABINET

SEE INTERSECTION LAYOUT FOR CABLE INFORMATION (NOT TO SCALE)

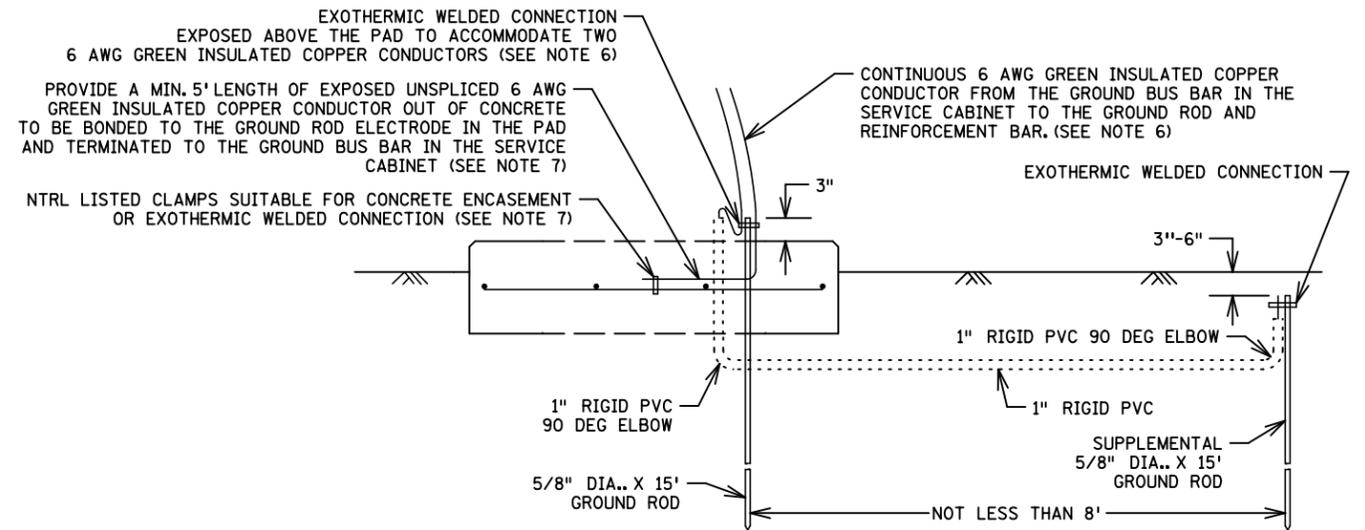
PLAN VIEW



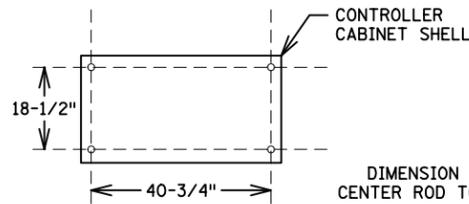
SIDE VIEW



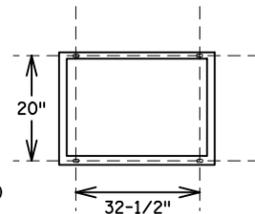
GROUNDING ELECTRODE SYSTEM



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



S.S.B. SERVICE CABINET BOLT PATTERN

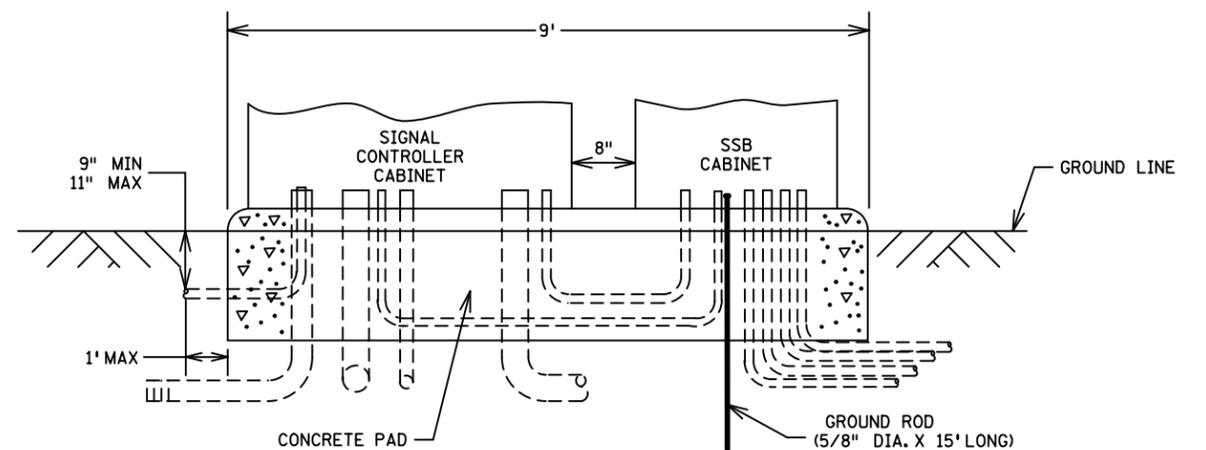


DIMENSION SHOWN ARE
CENTER ROD TO CENTER ROD

NOTES:

- THE DEPARTMENT WILL FURNISH THE ANCHOR RODS, NUTS, WASHERS AND RUBBER GASKET FOR THE CONTROLLER CABINET.
- BEVEL OR CHAMFER A 1/2 IN RADIUS ON THE OUTER EDGE OF THE PAD AND CONCRETE WALK.
- CAP THE TOP OF THE CONDUITS AFTER PLACEMENT UNTIL CABLES ARE PLACED.
- PROJECT THE CONDUIT 2" TO 3" ABOVE THE CONCRETE.
- USE CONCRETE MIX 3F52.
- SUPPLY TWO 15 FOOT GROUND ROD ELECTRODES IN ACCORDANCE WITH 2545.3R. PROVIDE ONE GROUND ROD IN THE EQUIPMENT PAD IN ACCORDANCE WITH 2545.3 F.3 AND THE OTHER OUTSIDE OF THE PAD WITH A MINIMUM OF 8 FEET OF SEPARATION BETWEEN ELECTRODES. BOND THE TWO GROUND RODS TOGETHER WITH ONE CONTINUOUS LENGTH UNSPLICED CONDUCTOR FROM THE OUTER MOST GROUND ROD TO THE GROUND BUS BAR IN THE CABINET. EXOTHERMICALLY WELD THE 6 AWG STRANDED GREEN INSULATED CONDUCTOR TO THE GROUND RODS. PLACE THE BONDING CONNECTION TO THE EQUIPMENT PAD GROUND ROD ABOVE THE CONCRETE. APPLY DE-OX COMPOUND TO THE GROUNDING CONNECTIONS AFTER FINAL ASSEMBLY.
- BOND A 6 AWG GREEN INSULATED GROUNDING CONDUCTOR TO THE REINFORCEMENT BAR MAT BEFORE CONCRETE POURING OPERATIONS. ENSURE THE CONDUCTOR IS PLACED IN THE LOAD SIDE OF THE CABINET. TERMINATE THE GREEN INSULATED 6 AWG GROUND CONDUCTOR ON THE GROUND BUS IN THE SERVICE CABINET WITHOUT SPLICES.
- ENSURE CONDUIT WITHIN THE PAD FROM ONE CABINET TO ANOTHER IS FULLY ENCASED IN CONCRETE.
- PLACE THE CONDUITS AS DIRECTED BY THE ENGINEER. ENSURE THE CONDUITS DO NOT INTERFERE WITH THE SUPPORTING MEMBERS OR DIVIDERS OF THE CABINET.
- ENSURE CONDUITS ARE PLACED TO THE LEFT OF THE DIVIDER AS SHOWN ON THE DETAIL.
- PLACE ANCHOR RODS AS SHOWN ON THE DETAIL AND PROJECT 3 IN TO 4 IN ABOVE THE CONCRETE.
- CENTER THE CABINETS ON THE PAD (LEFT & RIGHT) AS SHOWN ON THE DETAIL.
- CENTER REINFORCEMENT BAR MAT IN CONCRETE PAD.

FRONT VIEW



PLOTTED/REVISED: 16-APR-2019

DISTRICT #: Metro
I/PLOT NAME: 9 equipment pad detail
PATH & FILENAME: OT-ST-Signals\SamplePlan\Camera Sample Plan (4-10-19).dgn

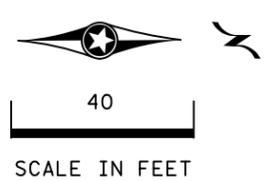
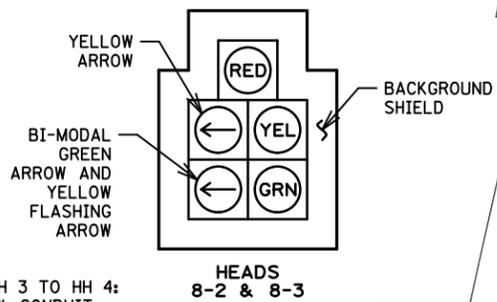
BY	DATE	REVISIONS	SYSTEM ID: XXXXXXX	T.E. XXXX	S.A.P. NO.	DRAWN BY:	CKD BY:	DATE:
			METER ADDRESS: 9999 SNELLING AVE N		CERTIFIED BY _____	LIC. NO. _____		DATE: _____
			OLD SYSTEM ID: XXXXX		STATE PROJ. NO. XXXX-XX (T.H.51)		SHEET NO. 9 OF 15 SHEETS	
EQUIPMENT PAD LAYOUT (TYPE SSB SERVICE CABINET) T.H. 51 (SNELLING AVE.) AT DAN PATCH AVE./ MIDWAY PARKWAY IN FALCON HEIGHTS AND ST. PAUL, RAMSEY COUNTY								

PLOTTED/REVISED: 16-APR-2019

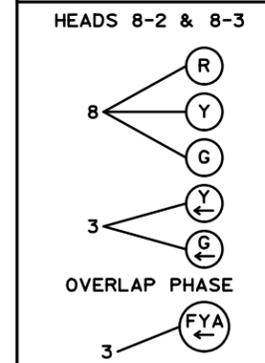
DISTRICT *: Metro
PLOT NAME: IO layout
PATH & FILENAME: OT-ST-Signals\SamplePlan\Camera Sample Plan (4-10-19).dgn

VIDEO DETECTION CHART		
CAMERA NUMBER	LOCATION	PHASE
V1	POLE 2	2 & 5
V2	POLE 3	4 & 7
V3	POLE 4	1 & 6
V4	POLE 4	3 & 8

5 SECTION FYA CLUSTER HEAD DETAIL



SIGNAL HEAD PHASING



SIGNAL HEAD CHART

FACE	R	Y	FYA	G	Y	G
1-1, 1-2	←	←	←	←		
2-1, 2-2, 2-3	●	●		●		
4-1, 4-2	●	●		●		
5-1, 5-2	←	←	←	←		
6-1, 6-2, 6-3	●	●		●		
7-1, 7-2	←	←	←	←		
8-1	●	●		●		
8-2, 8-3	●	●	←	●	←	←

-ALL SIGNAL INDICATIONS SHALL BE 12" LED
-ALL SIGNAL HEADS SHALL BE BLACK POLYCARBONATE WITH BACKGROUND SHIELDS
-FYA DENOTES FLASHING YELLOW ARROW

PED PB STATION
1-APS PB AND SIGN (RT ARROW) (PB6-2)
EXTEND INTO HH 4:
1" NOM. DIA. CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

HH 3 TO HH 4:
3" CONDUIT
2-12/C 14
1-6/C 14
2-4/C 14
* 1-3/C 14
1-3/C 14 LUM
2-2/C 14
* 1-3/C 20
1-CAT 5E VIDEO DET
1-1/C 6 INS. GR.

LIGHT POLE TO BE RELOCATED BY THE STATE FAIR
PED PB STATION
1-APS PB AND SIGN (LT ARROW) (PB6-1)
EXTEND INTO HH 5:
1" NOM. DIA. CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

HH 6 TO HH 5:
3" CONDUIT
2-12/C 14
2-4/C 14
* 1-3/C 14
2-3/C 14 LUM
2-2/C 14
* 1-3/C 20
1-CAT 5E VIDEO DET
1-CAT 5E TRA MGMT CAM
1-1/C 6 INS. GR.

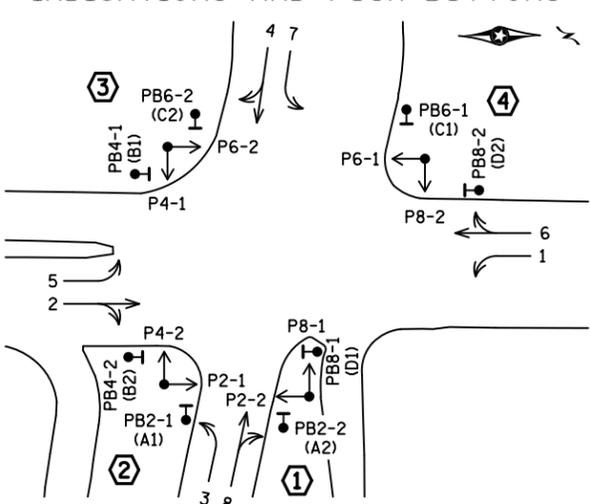
PED PB STATION
1-APS PB AND SIGN (RT ARROW) (PB8-2)
EXTEND INTO HH 5:
1" NOM. DIA. CONDUIT
1-2/C 14
1-1/C 6 INS. GR.

HH 1 TO HH 2:
3" CONDUIT
2-12/C 14
1-6/C 14
2-4/C 14
* 1-3/C 14
1-3/C 14 LUM
2-2/C 14
* 1-3/C 20
1-CAT 5E VIDEO DET
1-1/C 6 INS. GR.

HH 2 TO HH 3:
3" CONDUIT
2-12/C 14
1-6/C 14
2-4/C 14
* 1-3/C 14
1-3/C 14 LUM
2-2/C 14
* 1-3/C 20
1-CAT 5E VIDEO DET
1-1/C 6 INS. GR.

HH 7 TO HH 6:
3" CONDUIT
2-12/C 14
2-4/C 14
* 1-3/C 14
2-3/C 14 LUM
2-2/C 14
* 1-3/C 20
1-CAT 5E VIDEO DET
1-CAT 5E TRA MGMT CAM
1-1/C 6 INS. GR.

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS



SIGNAL SYSTEM OPERATION

- THE SIGNAL SYSTEM FLASH MODE IS ALL RED.
- NORMAL OPERATION IS 8 PHASE, WITH PHASES 1, 3, 5, AND 7 BEING FLASHING YELLOW ARROWS BY TIME OF DAY.
- PHASES 2 AND 6 SHALL BE ON VEHICLE RECALL.

INTERSECTION LAYOUT TRAFFIC CONTROL SIGNAL SYSTEM T.H. 51 (SNELLING AVE.) AT DAN PATCH AVE./ MIDWAY PARKWAY IN FALCON HEIGHTS AND ST. PAUL, RAMSEY COUNTY

S.A.P. NO. _____ DRAWN BY: _____ CKD BY: _____ DATE: _____
 CERTIFIED BY _____ LIC. NO. _____ DATE: _____
 STATE PROJ. NO. XXXX-XX (T.H.51) SHEET NO. 10 OF 15 SHEETS

SEE SHEET 11 FOR NOTES.

PLOTTED/REVISED: 16-APR-2019

DISTRICT #: Metro
I/PLOT NAME: II Intersection notes
PATH & FILENAME: OT ST Signals\SamplePlan\Camera Sample Plan (4-10-19).dgn

- ③ PA100 POLE FOUNDATION
TYPE PA100-A-55-D40-9 (DAVIT AT 350 DEG)
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
2-STRAIGHT MOUNT SIGNALS OVERHEAD AT 11' AND 23'
1-ANGLE MOUNT SIGNAL WITH CLUSTER ADAPTER AT 90 DEG
1-ANGLE MOUNT SIGNAL AT 180 DEG
2-ANGLE MOUNT C.D. PED HEADS AT 90 AND 180 DEG
* 1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 1+6)
1-VIDEO DETECTION CAMERA (STATE FURNISHED) MOUNTED ON 6' EXTENSION AT 5' FROM END OF MAST ARM
LUMINAIRE-LED (FOR 40' MOUNTING HEIGHT)
1-R10-X12 SIGN ADJACENT TO HEAD (1-1)
1-TYPE D SIGN (D-2) (SEE SIGN DETAILS)
3" CONDUIT TO HH 4:
2-12/C 14
1-6/C 14
2-4/C 14
* 1-3/C 14
1-3/C 14 LUM
* 1-3/C 20
1-CAT 5E VIDEO DET
1-1/C 6 INS. GR.

- ② PA90 POLE FOUNDATION
TYPE PA90-A-30-D40-9 (DAVIT AT 350 DEG)
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
1-STRAIGHT MOUNT SIGNAL OVERHEAD AT 11'
2-ANGLE MOUNT SIGNALS AT 90 AND 180 DEG
2-ANGLE MOUNT C.D. PED HEADS AT 90 AND 180 DEG
* 1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 4+7)
1-VIDEO DETECTION CAMERA (STATE FURNISHED) MOUNTED ON 6' EXTENSION AT 5' FROM END OF MAST ARM
LUMINAIRE-LED (FOR 40' MOUNTING HEIGHT)
1-R10-X12 SIGN ADJACENT TO HEAD (7-1)
2-TYPE D SIGNS (D-3) (D-4) (SEE SIGN DETAILS)
3" CONDUIT TO HH 3:
2-12/C 14
1-6/C 14
2-4/C 14
* 1-3/C 14
1-3/C 14 LUM
* 1-3/C 20
1-CAT 5E VIDEO DET
1-1/C 6 INS. GR.

- ④ PA100 POLE FOUNDATION
TYPE PA100-A-50-X6-350/CAM 400 EXTENSION (MOUNTED AT 350 DEG)
(INCLUDES LIGHTNING ROD, 7/16" GROUND BRAID AND GROUND ROD)
1-TRAFFIC MANAGEMENT CAMERA (STATE FURNISHED) WITH MOUNT
1-ANGLE MOUNT SIGNAL WITH CLUSTER ADAPTER OVERHEAD AT 0'
2-ANGLE MOUNT SIGNALS AT 90 AND 180 DEG
2-ANGLE MOUNT C.D. PED HEADS AT 90 AND 180 DEG
* 1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 2+5)
1-VIDEO DETECTION CAMERA (STATE FURNISHED) MOUNTED ON 6' EXTENSION AT 5' FROM END OF MAST ARM
TWIN LUMINAIRES-LED (FOR 35' MOUNTING HEIGHT) (MOUNT LUMINAIRES AT 170 AND 350 DEG)
1-R10-X12 SIGN ADJACENT TO HEAD (5-1)
2-TYPE D SIGNS (D-3) (D-4) (SEE SIGN DETAILS)
3" CONDUIT TO HH 5:
2-12/C 14
2-4/C 14
* 1-3/C 14
2-3/C 14 LUM
* 1-3/C 20
1-CAT 5E VIDEO DET
1-1/C 6 INS. GR.
1-7/16" GROUNDING BRAID TO GROUND ROD IN HH 1
1-CAT 5E TRA MGMT CAM

- ① PA100 POLE FOUNDATION
TYPE PA100-A-55-D25-9 (DAVIT AT 350 DEG)
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'
2-STRAIGHT MOUNT SIGNALS OVERHEAD AT 11' AND 23'
2-ANGLE MOUNT SIGNALS AT 90 AND 180 DEG
2-ANGLE MOUNT C.D. PED HEADS AT 90 AND 180 DEG
* 1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 2+5)
1-VIDEO DETECTION CAMERA (STATE FURNISHED) MOUNTED ON 6' EXTENSION AT 5' FROM END OF MAST ARM
LUMINAIRE-LED (FOR 40' MOUNTING HEIGHT)
1-R10-X12 SIGN ADJACENT TO HEAD (5-1)
1-TYPE D SIGN (D-1) (SEE SIGN DETAILS)
3" CONDUIT TO HH 7:
2-12/C 14
1-6/C 14
2-4/C 14
* 1-3/C 14
1-3/C 14 LUM
* 1-3/C 20
1-CAT 5E VIDEO DET
1-1/C 6 INS. GR.

- Ⓐ EQUIPMENT PAD (SEE DETAIL SHEET)
SERVICE CABINET (SSB) NO BATTERY BACKUP SYSTEM OR BATTERIES
CONTROLLER AND CABINET (STATE FURNISHED)
3" CONDUIT TO HH 1: 3" CONDUIT TO HH 7:
2-12/C 14 2-12/C 14
1-6/C 14 1-6/C 14
2-4/C 14 2-4/C 14
* 1-3/C 14 * 1-3/C 14
2-2/C 14 2-2/C 14
* 1-3/C 20 * 1-3/C 20
1-CAT 5E VIDEO DET 1-CAT 5E VIDEO DET

3" CONDUIT TO HH 1: 3" CONDUIT TO HH 7:
2-12/C 14 2-12/C 14
1-6/C #14 2-4/C 14
2-4/C 14 * 1-3/C 14
* 1-3/C 14 2-2/C 14
2-2/C 14 * 1-3/C 20
* 1-3/C 20 1-CAT 5E VIDEO DET
1-CAT 5E VIDEO DET 1-CAT 5E TRA MGMT CAM
1-1/C 6 INS. GR. 1-1/C 6 INS. GR.

- GROUND WIRE AND GROUND ROD - MIN 8' OUT FROM PAD
2-2" AND 1-3" CONDUIT STUBBED OUT (CAPPED BOTH ENDS)
1-1/2" CONDUIT TO PULL VAULT;
1-FIBER OPTIC CABLE (6-SM) WITH PRE-TERMINATED CABLE END (SEE NOTE 11)
CONTROLLER CABINET TO SERVICE CABINET:
2" CONDUIT
3-1/C 6
SERVICE CABINET TO SOP VIA HH 8:
2" CONDUIT
3-1/C 2
SERVICE CABINET TO EXTERNAL GR. RD.:
1" CONDUIT
1-1/C 6 INS. GR.
(SEE EQUIPMENT PAD LAYOUT)
SERVICE CABINET TO HH 1:
2" CONDUIT
5-3/C 14 (LUM)
HH 1 TO HH 7:
2" CONDUIT
3-3/C 14 (LUM)

- Ⓑ SOP-INPLACE WOOD POLE (XCEL ENERGY)
2" CONDUIT RISER, WEATHERHEAD AND CONDUIT TO HH 8:
3-1/C 2

- NOTES:
1. SEE SPECIAL PROVISIONS FOR STATE FURNISHED MATERIALS.
 2. REFER TO "FOR INFORMATION ONLY" SHEETS FOR INPLACE SIGNAL COMPONENTS.
 3. ENSURE THE EXACT LOCATION OF HANDHOLES, POLES, LOOP DETECTORS, PEDESTRIAN PUSH BUTTON STATIONS AND CURB RAMPS, AND EQUIPMENT PAD ARE VERIFIED IN THE FIELD BY MNDOT TRAFFIC OFFICE PERSONNEL.
 4. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE CONNECTION OF THE POWER FOR THE TRAFFIC SIGNAL SYSTEM.
 5. FOR REQUIRED SIGNS AND PAVEMENT MARKINGS SEE DETAIL SHEETS. ALL SIGNS REQUIRED ARE INCLUDED IN PAYMENT WITH THE SIGNAL SYSTEM PAY ITEM.
 6. THIS PLAN SPECIFIES CONDUIT SIZES, TYPES, AND GENERAL LOCATIONS. THE EXACT LOCATIONS WILL BE DETERMINED IN THE FIELD. CONDUITS UNDER THE ROADWAYS REQUIRE BORING.
 7. USE PVC OR HDPE FOR ALL NEW CONDUIT.
 8. CONDUIT SIZES ARE NOMINAL DIAMETER.
 9. REMOVAL OF THE INPLACE SIGNAL SYSTEM IS INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL SIGNAL SYSTEM PAY ITEM.
 10. CONTRACTOR MUST MAINTAIN STABILITY OF THE EXISTING POLE FOOTING UNTIL NEW POLE FITTING IS INSTALLED.
 11. PULLBACK EXISTING FIBER OPTIC CABLE (6-SM) FROM EXISTING CONTROL CABINET TO EXISTING FIBER OPTIC VAULT. F & I NEW CONDUIT TO NEW CONTROL CABINET. REINSTALL CABLE TO NEW CONTROL CABINET.
 12. ITEMS DENOTED WITH AN * ARE INCLUDED IN PAYMENT FOR THE EVP SYSTEM PAY ITEM.

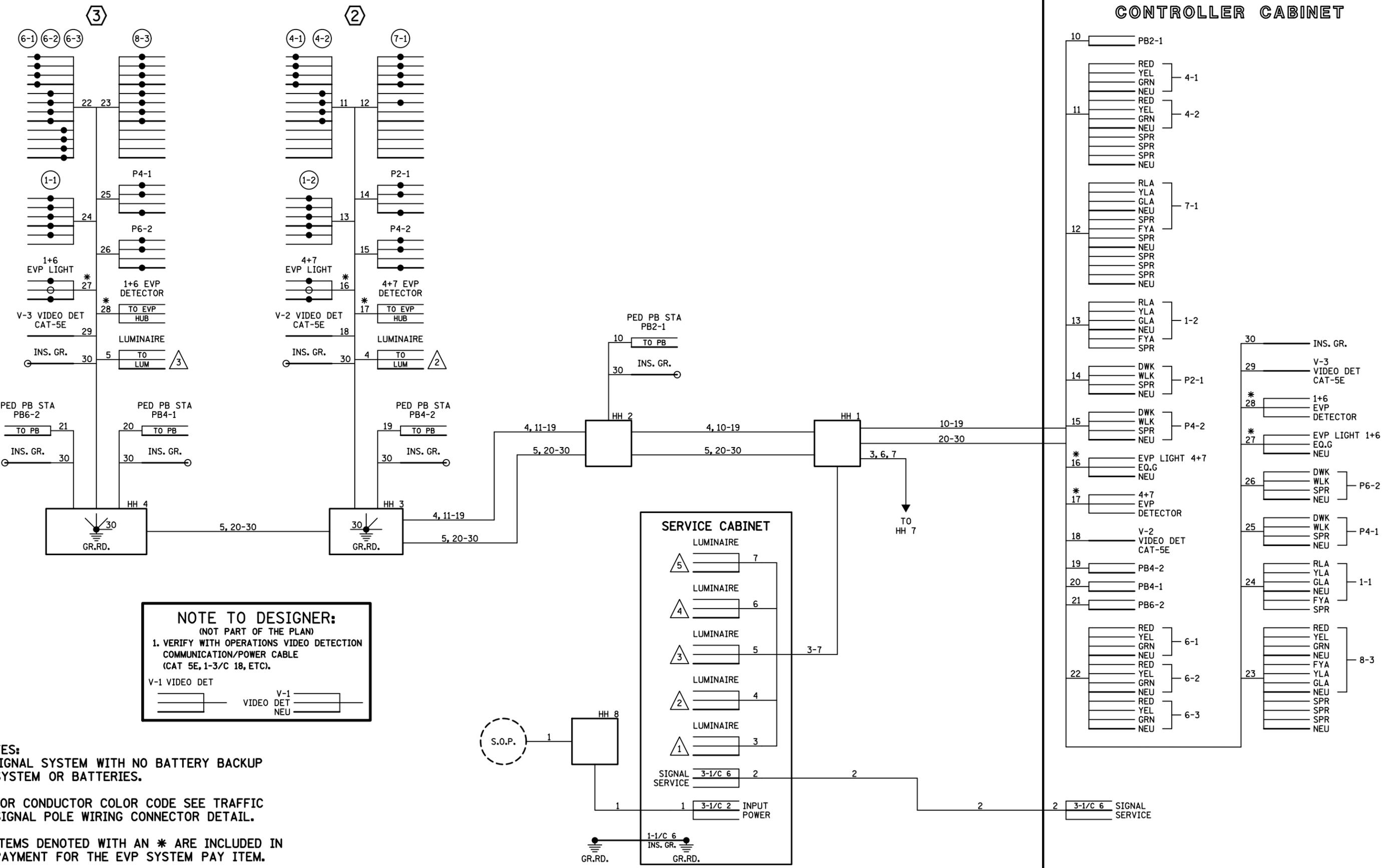
NOTE TO DESIGNER:
(NOT PART OF THE PLAN)
1. VERIFY WITH OPERATIONS VIDEO DETECTION COMMUNICATION/POWER CABLE (CAT 5E, 1-3/C 18, ETC).
2. ADD TRAFFIC MANAGEMENT CAMERA NUMBER WITH AS-BUILDS DRAWINGS.

BY	DATE	REVISIONS	SYSTEM ID: XXXXXXXX	T.E. XXXX	INTERSECTION NOTES TRAFFIC CONTROL SIGNAL SYSTEM T.H. 51 (SNELLING AVE.) AT DAN PATCH AVE./ MIDWAY PARKWAY IN FALCON HEIGHTS AND ST. PAUL, RAMSEY COUNTY	S.A.P. NO.	DRAWN BY:	CKD BY:	DATE:	
			METER ADDRESS: 9999 SNELLING AVE N			CERTIFIED BY _____	LIC. NO. _____	DATE: _____		
			OLD SYSTEM ID: XXXXX			STATE PROJ. NO. XXXX-XX (T.H.51)		SHEET NO. 11 OF 15 SHEETS		

PLOTTED/REVISED: 16-APR-2019

DISTRICT #: Metro
I/PLOT NAME: 12 wiring 1
PATH & FILENAME: OT-ST\SIGNALS\SamplePlan\Camera Sample Plan (4-10-19).dgn

CONTROLLER CABINET



BY	DATE	REVISIONS

SYSTEM ID: XXXXXXX T.E. XXXX
METER ADDRESS: 9999 SNELLING AVE N
OLD SYSTEM ID: XXXXX

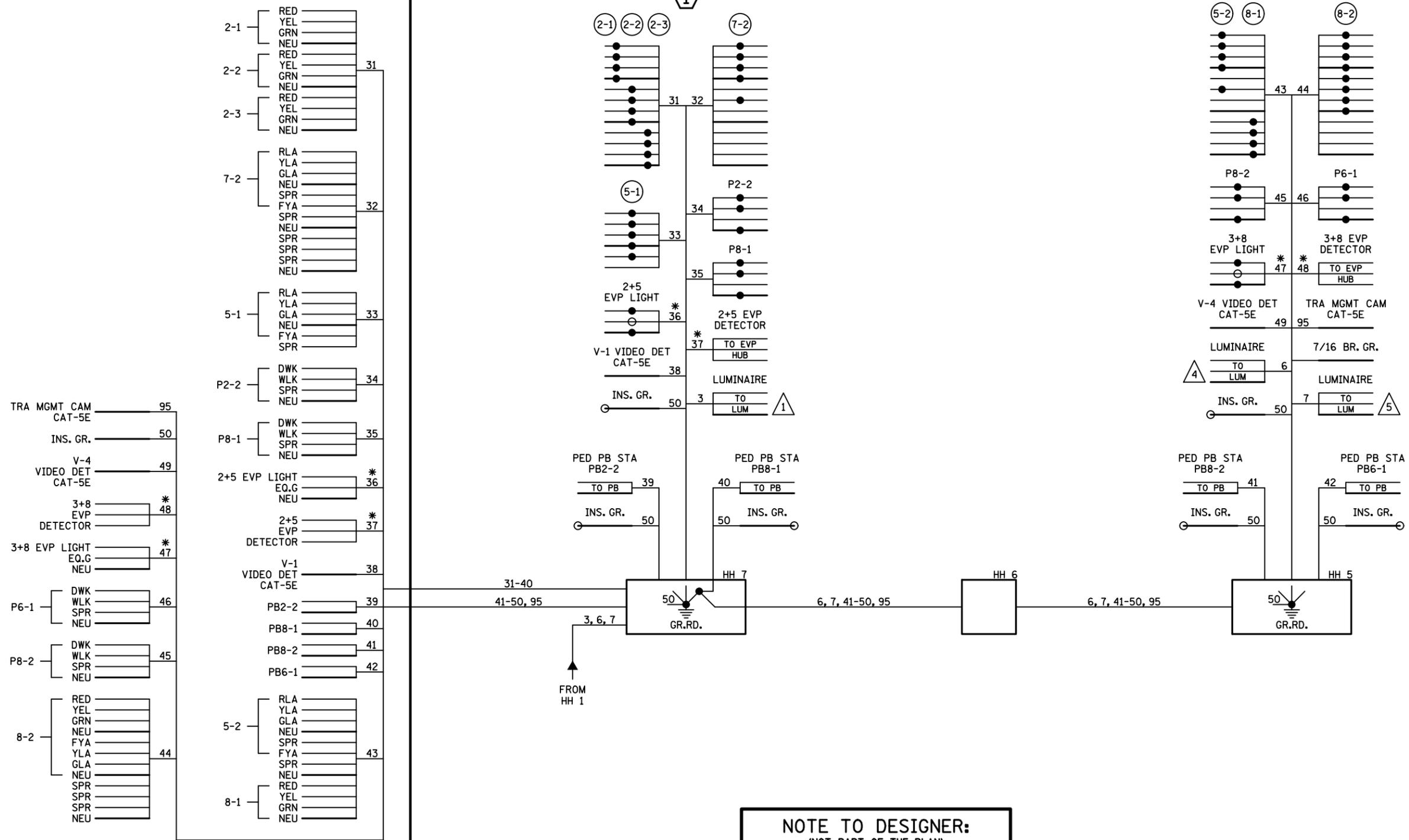
FIELD WIRING DIAGRAM (1 OF 2)
TRAFFIC CONTROL SIGNAL SYSTEM
T.H. 51 (SNELLING AVE.) AT DAN PATCH AVE./
MIDWAY PARKWAY IN FALCON HEIGHTS
AND ST. PAUL, RAMSEY COUNTY

S.A.P. NO. _____ DRAWN BY: _____ CKD BY: _____ DATE: _____
CERTIFIED BY _____ LIC. NO. _____ DATE: _____
STATE PROJ. NO. XXXX-XX (T.H.51) SHEET NO. 12 OF 15 SHEETS

PLOTTED/REVISED: 16-APR-2019

DISTRICT #: Metro
 IPLOT NAME: 13 wiring 2
 PATH & FILENAME: OT-ST-Signals\SamplePlan\Camera Sample Plan (4-10-19).dgn

CONTROLLER CABINET



FIBER OPTIC PIGTAIL → TO PULL VAULT 1-FO CABLE (6-SM)

NOTE TO DESIGNER:
 (NOT PART OF THE PLAN)
 1. VERIFY WITH OPERATIONS VIDEO DETECTION COMMUNICATION/POWER CABLE (CAT 5E, 1-3/C 18, ETC.).

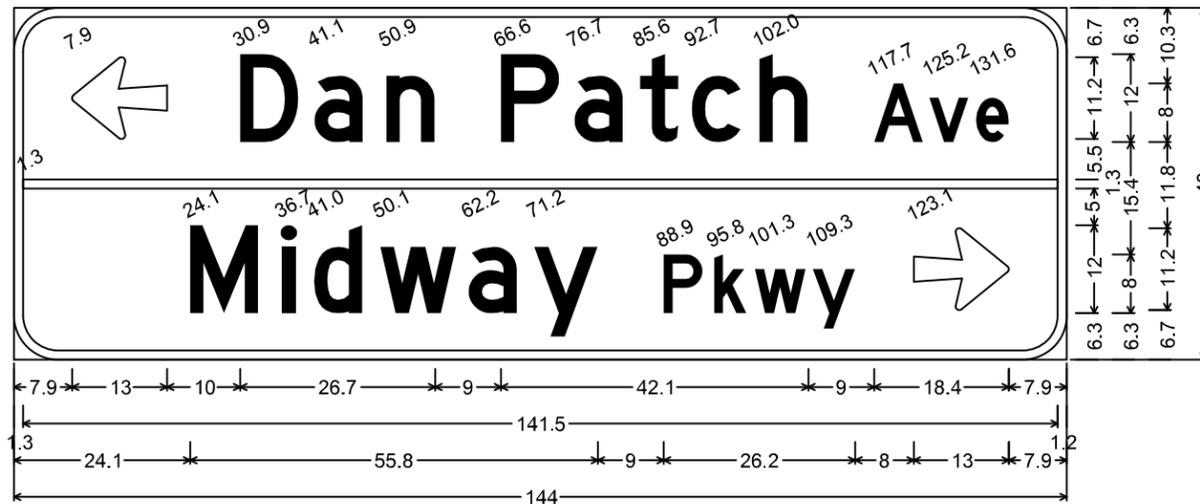
V-1 VIDEO DET
 VIDEO DET NEU

- NOTES:**
1. SIGNAL SYSTEM WITH NO BATTERY BACKUP SYSTEM OR BATTERIES.
 2. FOR CONDUCTOR COLOR CODE SEE TRAFFIC SIGNAL POLE WIRING CONNECTOR DETAIL.
 3. ITEMS DENOTED WITH AN * ARE INCLUDED IN PAYMENT FOR THE EVP SYSTEM PAY ITEM.

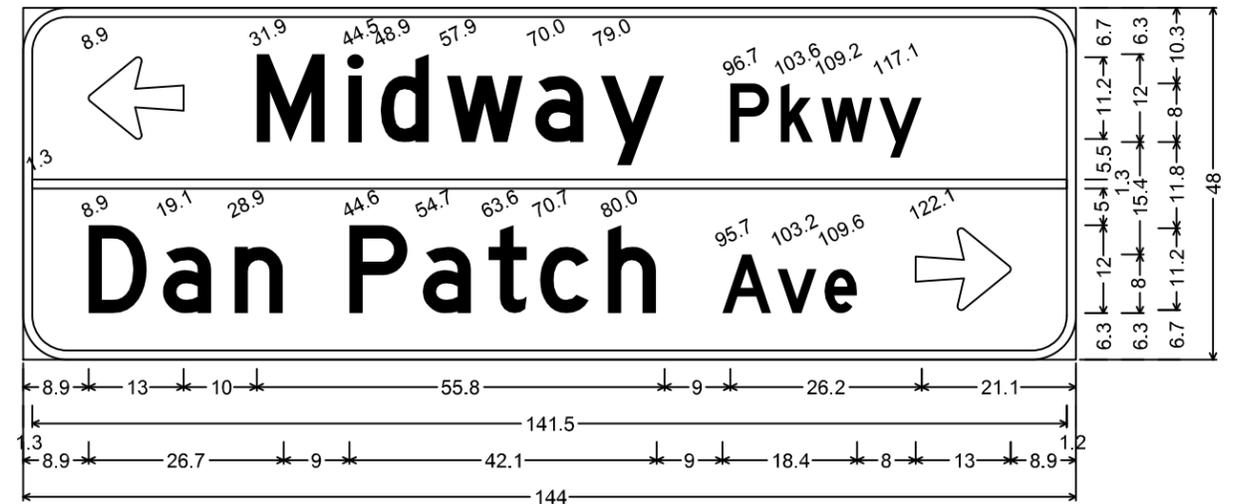
BY	DATE	REVISIONS	SYSTEM ID: XXXXXXXX	T.E. XXXX	S.A.P. NO.	DRAWN BY:	CKD BY:	DATE:
			METER ADDRESS: 9999 SNELLING AVE N		CERTIFIED BY _____	LIC. NO. _____		DATE: _____
			OLD SYSTEM ID: XXXXX		STATE PROJ.NO. XXXX-XX (T.H.51)		SHEET NO. 13 OF 15 SHEETS	

FIELD WIRING DIAGRAM (2 OF 2)
 TRAFFIC CONTROL SIGNAL SYSTEM
 T.H. 51 (SNELLING AVE.) AT DAN PATCH AVE./
 MIDWAY PARKWAY IN FALCON HEIGHTS
 AND ST. PAUL, RAMSEY COUNTY

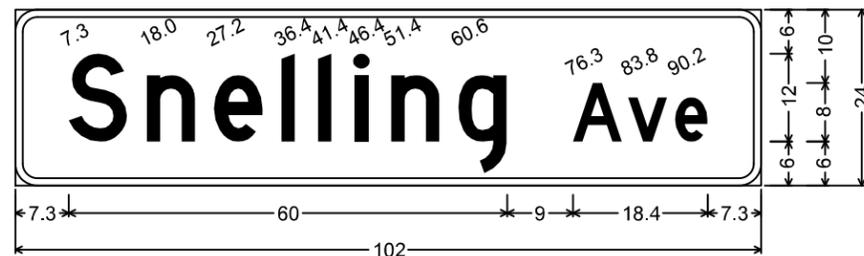
PLOTTED/REVISED: 16-APR-2019



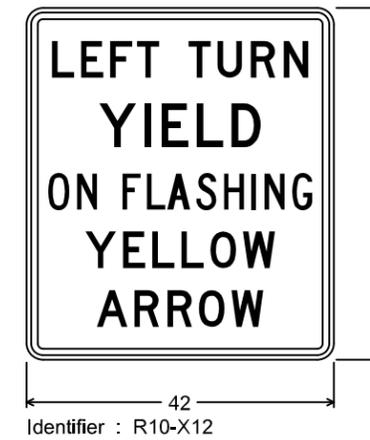
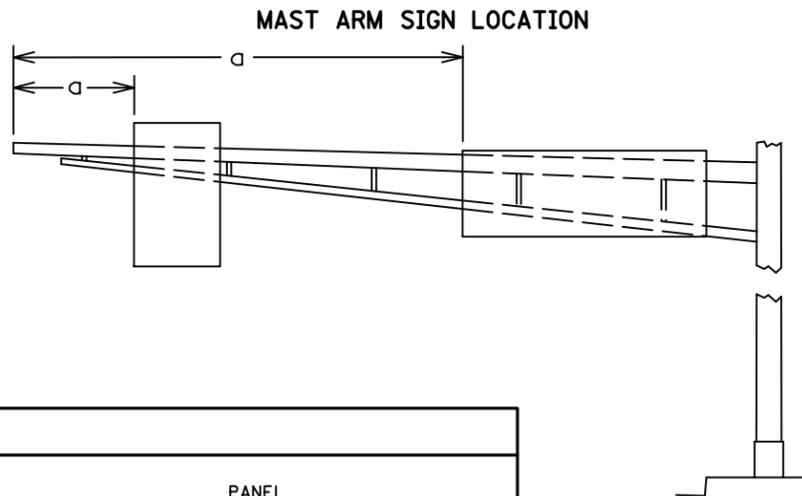
Identifier : D-1, MASTARM;
 6.0" Radius, 1.3" Border, White on Green;
 Arrow 5 - 13.0" 180°; [Dan Patch Ave] D; [Midway Pkwy] D; Arrow 5 - 13.0" 0°;



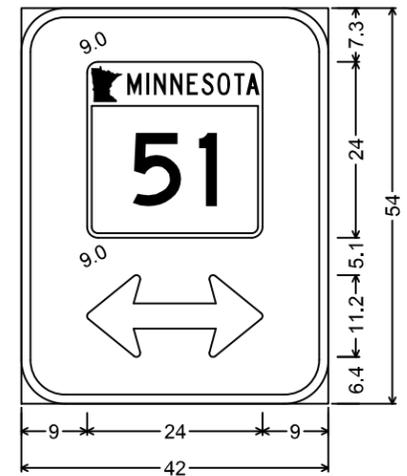
Identifier : D-2, MASTARM;
 6.0" Radius, 1.3" Border, White on Green;
 Arrow 5 - 13.0" 180°; [Midway Pkwy] D; [Dan Patch Ave] D; Arrow 5 - 13.0" 0°;



Identifier : D-3, MASTARM;
 3.0" Radius, 1.0" Border, White on Green;
 [Snelling Ave] D;



Identifier : R10-X12



Identifier : D-4, MASTARM;
 6.0" Radius, 1.3" Border, White on Green;
 Double Headed Arrow 5 - 24.0" 0°;

SIGNAL MOUNTED SIGNS

SIGN NO	POLE NO	QTY	a	PANEL			MOUNTING BRACKET		PANEL LEGEND
				SIZE	AREA	TOTAL AREA	NUMBER	SPACING (1)	
				INCH	SQ FT	SQ FT			
R10-X12	1	1	1	42 X 48	14.00	14.00	2	30	LEFT TURN YIELD ON FLASHING YELLOW
D-1	1	1	26	144 X 48	48.00	48.00	5	33	LT ARRW Dan Patch Ave Midway Pkwy RT ARRW
R10-X12	2	1	1	42 X 48	14.00	14.00	2	30	LEFT TURN YIELD ON FLASHING YELLOW
D-4	2	1	8	42 X 54	15.75	15.75	2	30	MINNESOTA 51 DBL ARRW
D-3	2	1	20	102 X 24	17.00	17.00	4	30	SNELLING AVE
R10-X12	3	1	1	42 X 48	14.00	14.00	2	30	LEFT TURN YIELD ON FLASHING YELLOW
D-2	3	1	26	144 X 48	48.00	48.00	5	33	LT ARRW Midway Pkwy Dan Patch Ave RT ARRW
R10-X12	4	1	2	42 X 48	14.00	14.00	2	30	LEFT TURN YIELD ON FLASHING YELLOW
D-4	4	1	16	42 X 54	15.75	15.75	2	30	MINNESOTA 51 DBL ARRW
D-3	4	1	24	102 X 24	17.00	17.00	4	30	SNELLING AVE

SPECIFIC NOTES:
 (1) SPACING BETWEEN STIFFENERS SHALL NOT EXCEED 36 INCHES AND SHALL BE UNIFORMLY SPACED.
 SEE MNDOT STANDARD SIGNS AND MARKINGS MANUAL, PAGE 105A FOR STIFFENER SPACING REQUIREMENTS.

GENERAL NOTES:
 1. CORNERS OF STANDARD SIGN PANELS WITH MARGINS SHALL BE TRIMMED.
 2. FOR STRUCTURAL DETAILS OF MAST ARM MOUNTED SIGNS SEE MNDOT STANDARD SIGNS AND MARKINGS MANUAL, PAGE 105A.
 3. FOR TYPE D STRINGER AND PANEL JOINT DETAILS SEE MNDOT STANDARD SIGNS AND MARKINGS MANUAL, PAGE 105.
 4. THE MAST ARM MOUNTED SIGNS ARE INCLUDED IN THE TRAFFIC CONTROL SIGNAL SYSTEM PAY ITEM.
 5. ALL DIMENSIONS ARE IN INCHES UNLESS NOTED OTHERWISE.

SALVAGE & INSTALL SIGN TYPE C

SIGN NO	QTY	POSTS			MTG HT (1)	PANEL		PANEL LEGEND
		NO & TYPE	KNEE BRACES QTY	LENGTH FEET		SIZE INCH		
C-201	1	1-0		12	9.5	30 x 30	STOP	
					9.5	30 x 30	DO NOT ENTER	
					7	24 x 30	RIGHT TURN ONLY	
TOTAL		1						

SPECIFIC NOTES:
 (1) MOUNTING HEIGHT IS MINIMUM (WITH A +6 INCH TOLERANCE).
 (2) MOUNT BACK TO BACK.
 (3) MOUNT IN CONCRETE, SEE SHEET NO. SS10, SS19, SS20 AND SS22.
 THE INPLACE SIGN PANELS ARE TO BE REMOVED AND INSTALLED ON NEW O-POST. F. & I. NEW O-POST.

GENERAL NOTES:
 1. SEE MNDOT STANDARD SIGNS AND MARKINGS MANUAL FOR PUNCHING CODE AND DETAILED DRAWINGS OF TYPE C SIGN PANELS.

DISTRICT #: Metro
 IPLOT NAME: 14 sign details
 PATH & FILENAME: OT-ST-Signals\SamplePlan\Camera Sample Plan (4-10-19).dgn

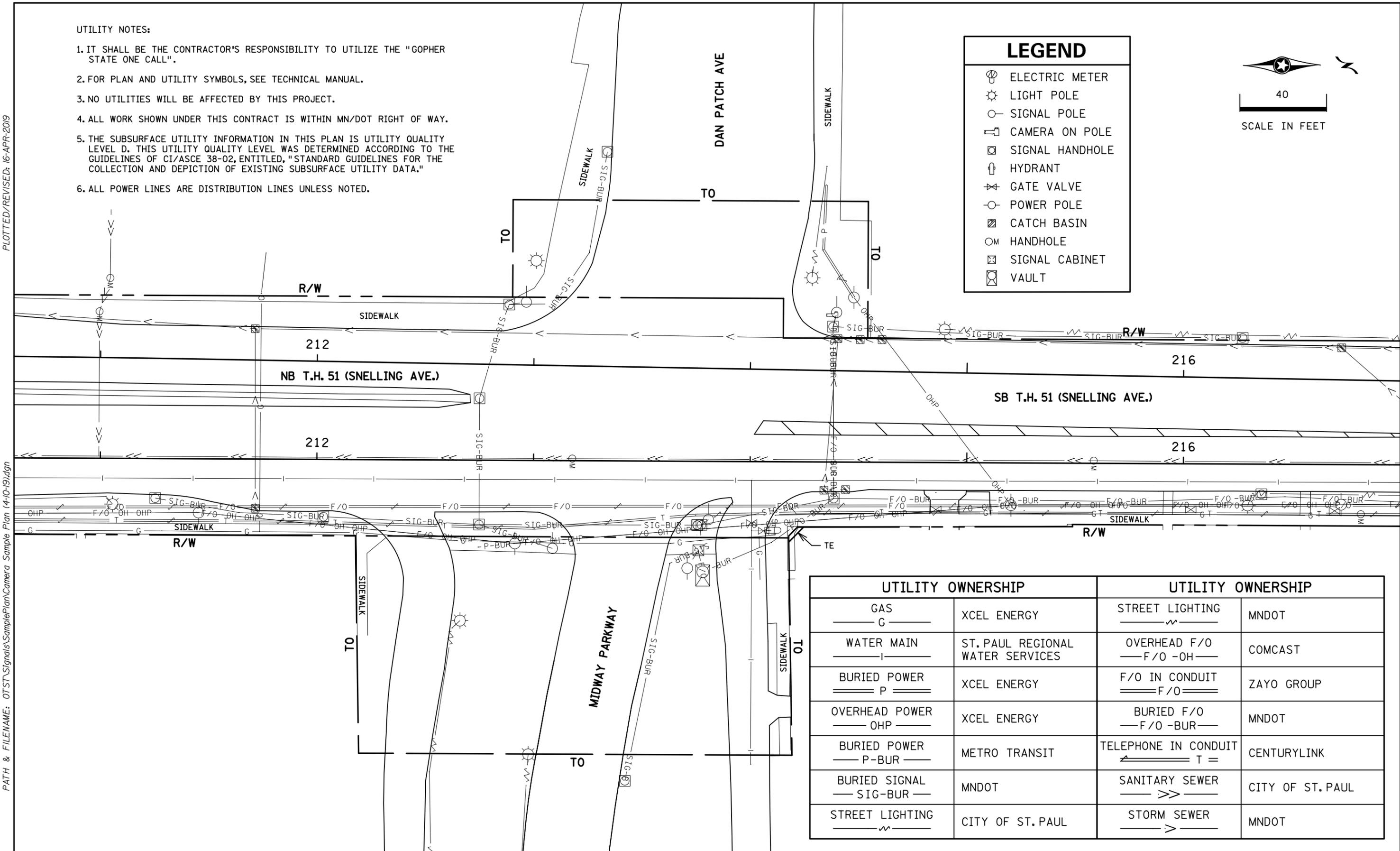
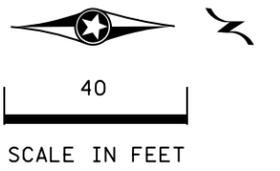
BY	DATE	REVISIONS	SYSTEM ID: XXXXXXXX	T.E. XXXX	S.A.P. NO.	DRAWN BY:	CKD BY:	DATE:
			METER ADDRESS: 9999 SNELLING AVE N		CERTIFIED BY _____	LIC. NO. _____	DATE: _____	
			OLD SYSTEM ID: XXXXX		STATE PROJ.NO. XXXX-XX (T.H.51)		SHEET NO. 14 OF 15 SHEETS	

SIGNING DETAIL
 TRAFFIC CONTROL SIGNAL SYSTEM
 T.H. 51 (SNELLING AVE.) AT DAN PATCH AVE./
 MIDWAY PARKWAY IN FALCON HEIGHTS
 AND ST. PAUL, RAMSEY COUNTY

UTILITY NOTES:

1. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "GOPHER STATE ONE CALL".
2. FOR PLAN AND UTILITY SYMBOLS, SEE TECHNICAL MANUAL.
3. NO UTILITIES WILL BE AFFECTED BY THIS PROJECT.
4. ALL WORK SHOWN UNDER THIS CONTRACT IS WITHIN MN/DOT RIGHT OF WAY.
5. THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED, "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."
6. ALL POWER LINES ARE DISTRIBUTION LINES UNLESS NOTED.

LEGEND	
	ELECTRIC METER
	LIGHT POLE
	SIGNAL POLE
	CAMERA ON POLE
	SIGNAL HANDHOLE
	HYDRANT
	GATE VALVE
	POWER POLE
	CATCH BASIN
	HANDHOLE
	SIGNAL CABINET
	VAULT



UTILITY OWNERSHIP		UTILITY OWNERSHIP	
GAS — G —	XCEL ENERGY	STREET LIGHTING — ⚡ —	MNDOT
WATER MAIN — —	ST. PAUL REGIONAL WATER SERVICES	OVERHEAD F/O — F/O -OH —	COMCAST
BURIED POWER = P =	XCEL ENERGY	F/O IN CONDUIT = F/O =	ZAYO GROUP
OVERHEAD POWER — OHP —	XCEL ENERGY	BURIED F/O — F/O -BUR —	MNDOT
BURIED POWER — P-BUR —	METRO TRANSIT	TELEPHONE IN CONDUIT — T =	CENTURYLINK
BURIED SIGNAL — SIG-BUR —	MNDOT	SANITARY SEWER — >> —	CITY OF ST. PAUL
STREET LIGHTING — ⚡ —	CITY OF ST. PAUL	STORM SEWER — > —	MNDOT

DISTRICT #: Metro
 I/PLOT NAME: 15 utilities
 PATH & FILENAME: OT\ST\Signals\SamplePlan\Camera Sample Plan (4-10-19).dgn
 PLOTTED/REVISED: 16-APR-2019

BY	DATE	REVISIONS	SYSTEM ID: XXXXXXXX	T.E. XXXX	S.A.P. NO.	DRAWN BY:	CKD BY:	DATE:
			METER ADDRESS: 9999 SNELLING AVE N		CERTIFIED BY _____	LIC. NO. _____		DATE: _____
			OLD SYSTEM ID: XXXXX		STATE PROJ.NO. XXXX-XX (T.H.51)		SHEET NO. 15 OF 15 SHEETS	

UTILITIES LAYOUT
T.H. 51 (SNELLING AVE.) AT DAN PATCH AVE./
MIDWAY PARKWAY IN FALCON HEIGHTS
AND ST. PAUL, RAMSEY COUNTY