

**INDIVIDUAL COLD SEQUENCE MPP FAULT CURRENT TABLE FOR TRAFFIC CABINET**

METER POWER PEDESTAL	SERVICE MAIN CIRCUIT BRKR.	TRANSFORMER KVA	'ISCA-T'	SEC. VOLTAGE-PHASE	SERVICE LATERAL FEEDER 1	MIN. CONDUCTOR LENGTH TO MPP ~	MAX. CONDUCTOR LENGTH TO MPP^	INTERRUPT SHORT CIRCUIT AMPACITY 'ISCA-P' @ MIN. CONDUCTOR LENGTH	MINIMUM AIC RATING FOR MAIN CIRCUIT BREAKER
NEW-MPP	100A-2P	25kVA	7440 A	120/240V-1PH	(3#1 XHHW CU) 2" PVC	10-FT	190-FT	6.872 A	10,000 A
NEW-MPP	100A-2P	25kVA	7440 A	120/240V-1PH	(3#1/0 XHHW CU) 2" PVC	20-FT	240-FT	6.566 A	10,000 A
NEW-MPP	100A-2P	25kVA	7440 A	120/240V-1PH	(3#2/0 XHHW CU) 2" PVC	20-FT	305-FT	6.712 A	10,000 A
NEW-MPP	100A-2P	50 kVA	14881 A	120/240V-1PH	(3#1 XHHW CU) 2" PVC	35-FT	190-FT	9.423 A	10,000 A
NEW-MPP	100A-2P	50 kVA	14881 A	120/240V-1PH	(3#1 XHHW CU) 2" PVC	10-FT	190-FT	12.768 A	22,000 A
NEW-MPP	100A-2P	50 kVA	14881 A	120/240V-1PH	(3#1/0 XHHW CU) 2" PVC	40-FT	240-FT	9.711 A	10,000 A
NEW-MPP	100A-2P	50 kVA	14881 A	120/240V-1PH	(3#2/0 XHHW CU) 2" PVC	50-FT	305-FT	9.646 A	10,000 A

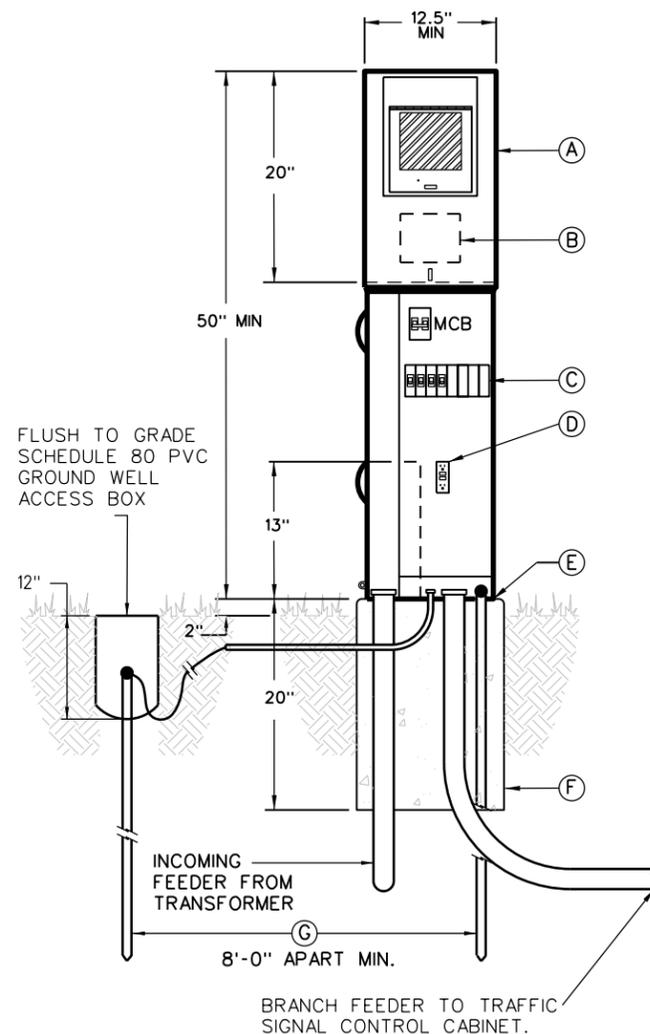
~ = MINIMUM SERVICE LATERAL CONDUCTOR LENGTH FOR THE ISCA VALUE GIVEN. IF CONDUCTOR LENGTH IS LESS THAN THIS VALUE THE PANEL SHALL BE BRACED AT THE NEXT HIGHER AIC RATING CALCULATED BY AN ELECTRICAL ENGINEER.

^ = MAXIMUM FEEDER LENGTH TO MAINTAIN LESS THAN 2% VOLTAGE DROP.

**COMPONENT LIST**

- (A) 200A METER SOCKET, 100A MCB, 120/240V, NEMA 3R COMBINATION SERVICE ENTRANCE RATED, COLD SEQUENCE, METER/POWER PEDESTAL WITH LEVER BYPASS, LOAD CENTER, MCB AND FUSED TEE-HANDLE PULL OUT DISCONNECT AHEAD OF METER. SEE PANEL SCHEDULE ON THIS SHEET FOR SIZE OF MAIN AND NUMBER AND SIZE OF BRANCH BREAKERS. SET ON NEW CONCRETE PAD PLUMB AND LEVEL.
- (B) TEE-HANDLE, PULL-OUT FUSE TYPE, DISCONNECT FLUSH MOUNTED INTO THE BACK SIDE OF THE ENCLOSURE WITH TAB FOR SEAL.
- (C) SERVICE ENTRANCE PANEL BREAKER SECTION, FOR CUSTOMER LOADS. SEE PANEL SCHEDULES ON THIS SHEET FOR SIZE OF BREAKERS AND NUMBER OF POLES REQUIRED.
- (D) BUILT-IN GFCI NEMA 5-20R, DUPLEX, GFCI MAINTENANCE RECEPTACLE FLUSH MOUNTED IN PANEL DEAD-FRONT.
- (E) PROVIDE RECESSED CONCRETE PAD MOUNTING PLATE WITH L-BOLTS TO MATCH THE ENCLOSURE BASE BOLT PATTERN.
- (F) OPTION 1: POLYMER CONCRETE PEDESTAL FOUNDATION WITH FIBERGLASS REINFORCEMENT. THE PAD SHALL BE CONTINUOUS CLOTH REINFORCEMENT ON THE INSIDE AND OUTSIDE PERIMETER. WEIGHT OF THE FOUNDATIONS SHALL BE STENCILED ON THE SIDEWALL OF THE FOUNDATION.  
 OPTION 2: PROVIDE 4000 PSI, RE-BAR RE-ENFORCE, CONCRETE WITH A MINIMUM DIRECT EARTH BURY DEPTH OF 18-INCH, 2-INCH OVERLAP OF THE ENCLOSURE ON ALL SIDES FRONT AND BACK AND 2-INCH EXPOSURE ABOVE GRADE. PROVIDE 3/4 INCH CHAMFERED EDGES. PROVIDE STRUCTURAL ENGINEERED STAMPED DRAWING FOR PAD.
- (G) 3/4"x 10'-0" LONG, COPPER-CLAD DRIVEN GROUND ROD WITH EXOTHERMIC WELD OR UNDERGROUND LUG CONNECT CONDUCTOR TO ROD. (2) RODS REQUIRED.

NOTE: ALL COMPONENTS LISTED SHALL BE INCLUDED IN THE PAY ITEM '613-50109 METER POWER PEDESTAL'. ALL COMPONENTS SHALL MEET CURRENT NATIONAL ELECTRIC CODE (NEC) AND BE UL LISTED FOR THE APPLICATION.



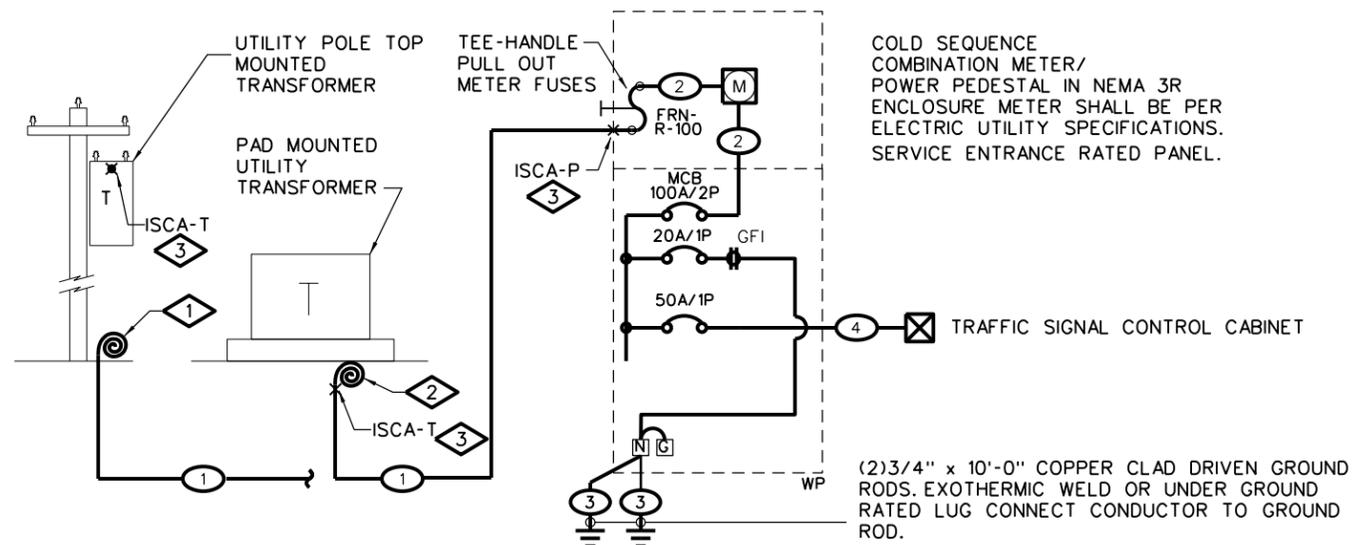
**COLD SEQUENCE METER POWER PEDESTAL ELEVATION DETAIL FOR TRAFFIC SIGNAL**

NOT TO SCALE

MOUNTING: PEDESTAL		PANEL "MPP_"		120/240V-1PH-3W	
FEEDER: BOTTOM		NEMA 3R ENCLOSURE SERVICE ENTRANCE RATED		100 AMPS MAIN BREAKER	
		BRANCH BREAKER			
		LEFT PHASE LOAD		RIGHT PHASE LOAD	
DESCRIPTION	Size	P	Ckt#	L1	L2
SPARE	20	1	1		
SPARE	20	1	3		
SPACE ONLY			5		
SPACE ONLY			7		
				180	4800
				180	4800
				Total Connected V.A.	
				4980 = Total Connected VA Both Phases	
LOAD	CONNECTED	D.FACT.	Est. KVA	AMPS	
LIGHTING	0 VA	1.25	0.00		
RECEPTACLES (1ST 10000)	180 VA	1.00	0.18		
RECEPTACLES (REMAINING)	0 VA	0.50	0.00		
MOTOR (LARGEST)	0 VA	1.25	0.00		
MOTORS (REMAINING)	0 VA	1.00	0.00		
ELECTRICAL HEATING	0 VA	1.25	0.00		
ELECTRICAL MISC.	4800 VA	1.00	4.80		
TOTAL ESTIMATED LOAD	4980 VA		4.98	21	

180 VA = Total Receptacle Load

**NOTE:** ALL LIGHTING CONTROL CENTERS AND ELECTRICAL EQUIPMENT SHALL BE PROVIDED WITH "ARC-FLASH HAZARD WARNING" LABELS PER THE NATIONAL ELECTRIC CODE NEC 110.16 AND NFPA 70E, AND ALL OTHER LABELS REQUIRED BY NFPA 70.



**FEEDER SCHEDULE**

- (1) SEE THE "INDIVIDUAL COLD SEQUENCE MPP FAULT CURRENT TABLE FOR TRAFFIC CABINET" ON THIS SHEET FOR THIS FOR THESE ISCA VALUES.
- (2) INTERNAL FEEDER SUPPLIED WITH PEDESTAL
- (3) 1\*4 STRANDED BARE COPPER THROUGH FEEDER ENCLOSURE TO GROUND RODS.
- (4) (2\*6THWN CU & 1\*10GND) 2" PVC CONDUIT

**ONE-LINE NOTES:**

- (1) COIL ENOUGH CONDUCTORS AT THE BASE OF THE POLE TO REACH THE TRANSFORMER TERMINALS AT THE TOP OF THE POLE. FINAL ROUTING OF CONDUCTORS UP THE POLE AND CONNECTION TO TRANSFORMER BY ELECTRIC UTILITY.
- (2) COIL MINIMUM OF 5'-0" OF CONDUCTORS AT THE TRANSFORMER BASE. FINAL CONNECTION TO TRANSFORMER BY ELECTRIC UTILITY.
- (3) SEE THE "INDIVIDUAL COLD SEQUENCE MPP FAULT CURRENT TABLE FOR TRAFFIC CABINET" ON THIS SHEET FOR THIS FOR THESE ISCA VALUES.

**COLD SEQUENCE METER POWER PEDESTAL ONE-LINE DIAGRAM FOR TRAFFIC SIGNAL**

NOT TO SCALE

<b>Computer File Information</b>		<b>Sheet Revisions</b>		Colorado Department of Transportation 2829 W. Howard Pl. Denver, CO 80204 Phone: 303-757-9654 FAX: 303-757-9219	<b>TRAFFIC SIGNAL ONE-LINE DIAGRAMS</b>	<b>STANDARD PLAN NO.</b>	
Creation Date: 06/14/2023	Created By: KUCZKOWSKI	Date:	Comments:			S-613-4	
Last Modification Date: N/A	Last Modified By: CLANTON AND ASSOCIATES, INC.			Standard Sheet No. 1 of 6			
CAD Ver.: Connect Edition Scale: Not to Scale Units: English				Traffic Safety & Engineering	EB	Project Sheet Number:	

### INDIVIDUAL COLD SEQUENCE MPP FAULT CURRENT TABLE FOR TRAFFIC SIGNAL WITH LUMINAIRES

METER POWER PEDESTAL	SERVICE MAIN CIRCUIT BRKR.	TRANSFORMER KVA	'ISCA-T'	SEC. VOLTAGE-PHASE	SERVICE LATERAL FEEDER 1	MIN. CONDUCTOR LENGTH TO MPP~	MAX. CONDUCTOR LENGTH TO MPP^	INTERRUPT SHORT CIRCUIT AMPACITY 'ISCA-P' @ MIN. CONDUCTOR LENGTH	MINIMUM AIC RATING FOR MAIN CIRCUIT BREAKER
NEW-MPP	100A-2P	25kVA	7440 A	120/240V-1PH	(3#1 XHHW CU) 2" PVC	10-FT	190-FT	6,872 A	10,000 A
NEW-MPP	100A-2P	25kVA	7440 A	120/240V-1PH	(3#1/0 XHHW CU) 2" PVC	20-FT	240-FT	6,566 A	10,000 A
NEW-MPP	100A-2P	25kVA	7440 A	120/240V-1PH	(3#2/0 XHHW CU) 2" PVC	20-FT	305-FT	6,712 A	10,000 A
NEW-MPP	100A-2P	50 kVA	14881 A	120/240V-1PH	(3#1 XHHW CU) 2" PVC	35-FT	190-FT	9,423 A	10,000 A
NEW-MPP	100A-2P	50 kVA	14881 A	120/240V-1PH	(3#1 XHHW CU) 2" PVC	10-FT	190-FT	12,768 A	22,000 A
NEW-MPP	100A-2P	50 kVA	14881 A	120/240V-1PH	(3#1/0 XHHW CU) 2" PVC	40-FT	240-FT	9,711 A	10,000 A
NEW-MPP	100A-2P	50 kVA	14881 A	120/240V-1PH	(3#2/0 XHHW CU) 2" PVC	50-FT	305-FT	9,646 A	10,000 A

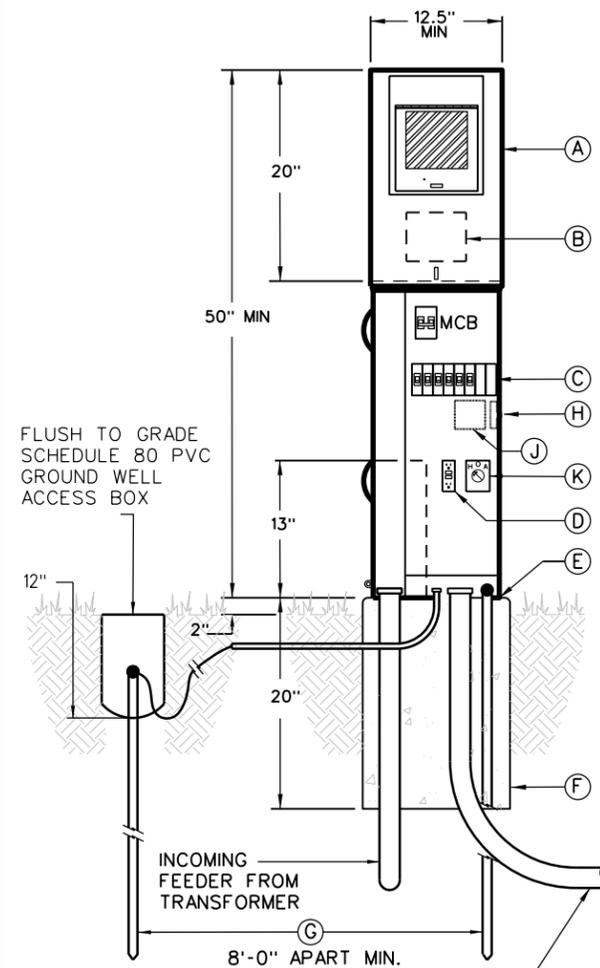
~ = MINIMUM SERVICE LATERAL CONDUCTOR LENGTH FOR THE ISCA VALUE GIVEN. IF CONDUCTOR LENGTH IS LESS THAN THIS VALUE THE PANEL SHALL BE BRACED AT THE NEXT HIGHER AIC RATING CALCULATED BY AN ELECTRICAL ENGINEER.

^ = MAXIMUM FEEDER LENGTH TO MAINTAIN LESS THAN 2% VOLTAGE DROP.

#### COMPONENT LIST

- (A) 200A METER SOCKET, 100A MCB, 120/240V, NEMA 3R COMBINATION SERVICE ENTRANCE RATED, COLD SEQUENCE, METER/POWER PEDESTAL WITH LEVER BYPASS, LOAD CENTER, MCB AND FUSED TEE-HANDLE PULL OUT DISCONNECT AHEAD OF METER. SEE PANEL SCHEDULE ON THIS SHEET FOR SIZE OF MAIN AND NUMBER AND SIZE OF BRANCH BREAKERS. SET ON NEW CONCRETE PAD PLUMB AND LEVEL.
- (B) TEE-HANDLE, PULL-OUT FUSE TYPE, DISCONNECT FLUSH MOUNTED INTO THE BACK SIDE OF THE ENCLOSURE WITH TAB FOR SEAL.
- (C) SERVICE ENTRANCE PANEL BREAKER SECTION, FOR CUSTOMER LOADS. SEE PANEL SCHEDULES ON THIS SHEET FOR SIZE OF BREAKERS AND NUMBER OF POLES REQUIRED.
- (D) BUILT-IN GFCI NEMA 5-20R, DUPLEX, GFCI MAINTENANCE RECEPTACLE FLUSH MOUNTED IN PANEL DEAD-FRONT.
- (E) PROVIDE RECESSED CONCRETE PAD MOUNTING PLATE WITH L-BOLTS TO MATCH THE ENCLOSURE BASE BOLT PATTERN.
- (F) OPTION 1: POLYMER CONCRETE PEDESTAL FOUNDATION WITH FIBERGLASS REINFORCEMENT. THE PAD SHALL BE CONTINUOUS CLOTH REINFORCEMENT ON THE INSIDE AND OUTSIDE PERIMETER. WEIGHT OF THE FOUNDATIONS SHALL BE STENCILED ON THE SIDEWALL OF THE FOUNDATION.  
OPTION 2: PROVIDE 4000 PSI, RE-BAR RE-ENFORCE, CONCRETE WITH A MINIMUM DIRECT EARTH BURY DEPTH OF 18-INCH, 2-INCH OVERLAP OF THE ENCLOSURE ON ALL SIDES FRONT AND BACK AND 2-INCH EXPOSURE ABOVE GRADE. PROVIDE 3/4-INCH CHAMFERED EDGES. PROVIDE STRUCTURAL ENGINEERED STAMPED DRAWING FOR PAD.
- (G) 3/4"x 10'-0" LONG, COPPER-CLAD DRIVEN GROUND ROD WITH EXOTHERMIC WELD OR UNDERGROUND LUG CONNECT CONDUCTOR TO ROD. (2) RODS REQUIRED.
- (H) BUILT-IN PHOTOCELL FOR ON/OFF CONTROL OF LUMINAIRES ON SIGNALS POLES.
- (J) BUILT-IN, 2-POLE 20A, LIGHTING CONTACTOR FOR ON/OFF CONTROL OF LIGHTS ON SIGNAL POLES
- (K) OPTIONAL HAND-OFF-AUTO SWITCH WHEN ITEMS 'H' AND 'J' ABOVE ARE USED. PROVIDE THIS HOA SWITCH WITH THE PHOTOCELL CONTROL WIRED IN THE AUTO POSITION.

NOTE:  
ALL COMPONENTS LISTED SHALL BE INCLUDED IN THE PAY ITEM '613-50109 METER POWER PEDESTAL'. ALL COMPONENTS SHALL MEET CURRENT NATIONAL ELECTRIC CODE (NEC) AND BE UL LISTED FOR THE APPLICATION.

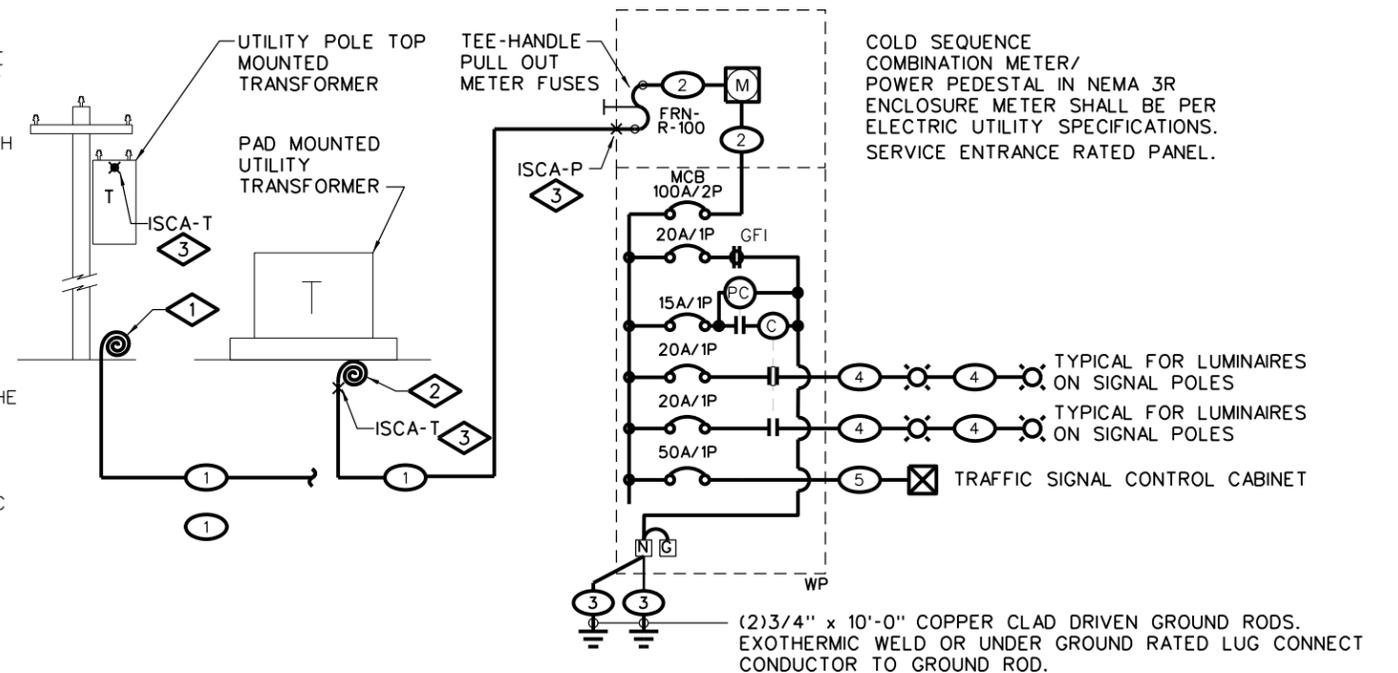


COLD SEQUENCE METER POWER PEDESTAL ELEVATION DETAIL FOR TRAFFIC SIGNAL WITH LUMINAIRES

NOT TO SCALE

MOUNTING: PEDESTAL		PANEL "MPP"		120/240V-1PH-3W							
FEEDER: BOTTOM		NEMA 3R ENCLOSURE SERVICE ENTRANCE RATED		100 AMPS MAIN BREAKER							
		BRANCH BREAKER									
		LEFT PHASE LOAD		RIGHT PHASE LOAD							
DESCRIPTION	Size	P	Ckt#	L1	L2	Ckt#	Size	P	DESCRIPTION		
TRAFFIC SIGNAL POLE LIGHTING	20	1	1	240			180	2	20	1	MPP_MAINTENANCE RECEPT.
TRAFFIC SIGNAL POLE LIGHTING	20	1	3		240		4800	4	50	1	TRAFFIC CONTROL CABINET
MPP_LIGHTING CONTROL CKT.	15	1	5	200				6			SPACE ONLY
SPARE	20	1	7					8			SPACE ONLY
				440	240			180	4800		
				620	5040	Total Connected V.A.					
						5660 = Total Connected VA Both Phases					
LOAD	CONNECTED	D.FACT.	Est. KVA	AMPS							
LIGHTING	480 VA	1.25	0.60			180 VA = Total Receptacle Load					
RECEPTACLES (1ST 10000)	180 VA	1.00	0.18								
RECEPTACLES (REMAINING)	0 VA	0.50	0.00								
MOTOR (LARGEST)	0 VA	1.25	0.00								
MOTORS (REMAINING)	0 VA	1.00	0.00								
ELECTRICAL HEATING	0 VA	1.25	0.00								
ELECTRICAL MISC.	5000 VA	1.00	5.00								
TOTAL ESTIMATED LOAD	5660 VA		5.78	24							

NOTE:  
ALL LIGHTING CONTROL CENTERS AND ELECTRICAL EQUIPMENT SHALL BE PROVIDED WITH "ARC-FLASH HAZARD WARNING" LABELS PER THE NATIONAL ELECTRIC CODE NEC 110.16 AND NFPA 70E-2015, AND ALL OTHER LABELS REQUIRED BY NFPA 70.



#### FEEDER SCHEDULE

- (1) SEE THE "INDIVIDUAL COLD SEQUENCE MPP FAULT CURRENT TABLE FOR TRAFFIC SIGNAL WITH LUMINAIRES" ON THIS SHEET FOR THIS FOR THESE ISCA VALUES.
- (2) INTERNAL FEEDER SUPPLIED WITH PEDESTAL
- (3) 1\*4 STRANDED BARE COPPER THROUGH FEEDER ENCLOSURE TO GROUND RODS.
- (4) (2\*10THWN CU & 1\*10GND) 2" PVC CONDUIT
- (5) (2\*6THWN CU & 1\*10GND) 2" PVC CONDUIT

#### ONE-LINE NOTES:

- (1) COIL ENOUGH CONDUCTORS AT THE BASE OF THE POLE TO REACH THE TRANSFORMER TERMINALS AT THE TOP OF THE POLE. FINAL ROUTING OF CONDUCTORS UP THE POLE AND CONNECTION TO TRANSFORMER BY ELECTRIC UTILITY.
- (2) COIL MINIMUM OF 5'-0" CONDUCTORS AT THE TRANSFORMER BASE. FINAL CONNECTION TO TRANSFORMER BY ELECTRIC UTILITY.
- (3) SEE THE "INDIVIDUAL COLD SEQUENCE MPP FAULT CURRENT TABLE FOR TRAFFIC CABINET" ON THIS SHEET FOR THIS FOR THESE ISCA VALUES.

COLD SEQUENCE METER POWER PEDESTAL ONE-LINE DIAGRAM FOR TRAFFIC SIGNAL WITH LUMINAIRES

NOT TO SCALE

Computer File Information		Sheet Revisions		Colorado Department of Transportation 2829 W. Howard Pl. Denver, CO 80204 Phone: 303-757-9654 FAX: 303-757-9219	TRAFFIC SIGNAL ONE-LINE DIAGRAMS	STANDARD PLAN NO.	
Creation Date: 06/14/2023		Date:	Comments:				
Created By: KUCZKOWSKI				Traffic Safety & Engineering	EB	Standard Sheet No. 2 of 6	
Last Modification Date: N/A						Project Sheet Number:	
Last Modified By: CLANTON AND ASSOCIATES, INC.				Issued By: Traffic Safety & Engineering Branch			
CAD Ver.: Connect Edition Scale: Not to Scale Units: English							

**INDIVIDUAL COLD SEQUENCE MPP FAULT CURRENT TABLE FOR SIGNAL WITH LUMINAIRES AND CAMERA**

METER POWER PEDESTAL	SERVICE MAIN CIRCUIT BRKR.	TRANSFORMER KVA	'ISCA-T'	SEC. VOLTAGE-PHASE	SERVICE LATERAL FEEDER	MIN. CONDUCTOR LENGTH TO MPP~	MAX. CONDUCTOR LENGTH TO MPP^	INTERRUPT SHORT CIRCUIT AMPACITY 'ISCA-P' @ MIN. CONDUCTOR LENGTH	MINIMUM AIC RATING FOR MAIN CIRCUIT BREAKER
NEW-MPP_	100A-2P	25kVA	7440 A	120/240V-1PH	(3#1 XHHW CU) 2" PVC	10-FT	190-FT	6,872 A	10,000 A
NEW-MPP_	100A-2P	25kVA	7440 A	120/240V-1PH	(3#1/0 XHHW CU) 2" PVC	20-FT	240-FT	6,566 A	10,000 A
NEW-MPP_	100A-2P	25kVA	7440 A	120/240V-1PH	(3#2/0 XHHW CU) 2" PVC	20-FT	305-FT	6,712 A	10,000 A
NEW-MPP_	100A-2P	50 kVA	14881 A	120/240V-1PH	(3#1 XHHW CU) 2" PVC	35-FT	190-FT	9,423 A	10,000 A
NEW-MPP_	100A-2P	50 kVA	14881 A	120/240V-1PH	(3#1 XHHW CU) 2" PVC	10-FT	190-FT	12,768 A	22,000 A
NEW-MPP_	100A-2P	50 kVA	14881 A	120/240V-1PH	(3#1/0 XHHW CU) 2" PVC	40-FT	240-FT	9,711 A	10,000 A
NEW-MPP_	100A-2P	50 kVA	14881 A	120/240V-1PH	(3#2/0 XHHW CU) 2" PVC	50-FT	305-FT	9,646 A	10,000 A

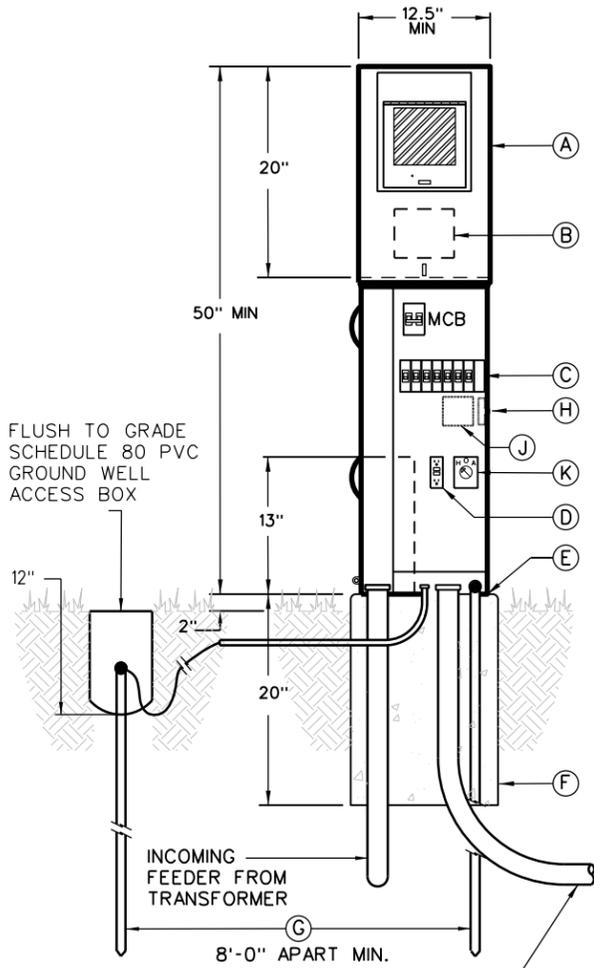
~ = MINIMUM SERVICE LATERAL CONDUCTOR LENGTH FOR THE ISCA VALUE GIVEN. IF CONDUCTOR LENGTH IS LESS THAN THIS VALUE THE PANEL SHALL BE BRACED AT THE NEXT HIGHER AIC RATING CALCULATED BY AN ELECTRICAL ENGINEER.

^ = MAXIMUM FEEDER LENGTH TO MAINTAIN LESS THAN 2% VOLTAGE DROP.

**COMPONENT LIST**

- (A) 200A METER SOCKET, 100A MCB, 120/240V, NEMA 3R COMBINATION SERVICE ENTRANCE RATED, COLD SEQUENCE, METER/POWER PEDESTAL WITH LEVER BYPASS, LOAD CENTER, MCB AND FUSED TEE-HANDLE PULL OUT DISCONNECT AHEAD OF METER. SEE PANEL SCHEDULE ON THIS SHEET FOR SIZE OF MAIN AND NUMBER AND SIZE OF BRANCH BREAKERS. SET ON NEW CONCRETE PAD PLUMB AND LEVEL.
- (B) TEE-HANDLE, PULL-OUT FUSE TYPE, DISCONNECT FLUSH MOUNTED INTO THE BACK SIDE OF THE ENCLOSURE WITH TAB FOR SEAL.
- (C) SERVICE ENTRANCE PANEL BREAKER SECTION, FOR CUSTOMER LOADS. SEE PANEL SCHEDULES ON THIS SHEET FOR SIZE OF BREAKERS AND NUMBER OF POLES REQUIRED.
- (D) BUILT-IN GFCI NEMA 5-20R, DUPLEX, GFCI MAINTENANCE RECEPTACLE FLUSH MOUNTED IN PANEL DEAD-FRONT.
- (E) PROVIDE RECESSED CONCRETE PAD MOUNTING PLATE WITH L-BOLTS TO MATCH THE ENCLOSURE BASE BOLT PATTERN.
- (F) OPTION 1: POLYMER CONCRETE PEDESTAL FOUNDATION WITH FIBERGLASS REINFORCEMENT. THE PAD SHALL BE CONTINUOUS CLOTH REINFORCEMENT ON THE INSIDE AND OUTSIDE PERIMETER. WEIGHT OF THE FOUNDATIONS SHALL BE STENCILED ON THE SIDEWALL OF THE FOUNDATION.  
  
OPTION 2: PROVIDE 4000 PSI, RE-BAR RE-ENFORCE, CONCRETE WITH A MINIMUM DIRECT EARTH BURY DEPTH OF 18-INCH, 2-INCH OVERLAP OF THE ENCLOSURE ON ALL SIDES FRONT AND BACK AND 2-INCH EXPOSURE ABOVE GRADE. PROVIDE 3/4-INCH CHAMFERED EDGES. PROVIDE STRUCTURAL ENGINEER STAMPED DRAWING FOR PAD.
- (G) 3/4"x 10'-0" LONG, COPPER-CLAD DRIVEN GROUND ROD WITH EXOTHERMIC WELD OR UNDERGROUND LUG CONNECT CONDUCTOR TO ROD. (2) RODS REQUIRED.
- (H) BUILT-IN PHOTOCELL FOR ON/OFF CONTROL OF LUMINAIRES ON SIGNALS POLES.
- (J) BUILT-IN, 2-POLE 20A, LIGHTING CONTACTOR FOR ON/OFF CONTROL OF LIGHTS ON SIGNAL POLES
- (K) OPTIONAL HAND-OFF-AUTO SWITCH WHEN ITEMS 'H' AND 'J' ABOVE ARE USED. PROVIDE THIS HOA SWITCH WITH THE PHOTOCELL CONTROL WIRED IN THE AUTO POSITION.

NOTE:  
ALL COMPONENTS LISTED SHALL BE INCLUDED IN THE PAY ITEM '613-50109 METER POWER PEDESTAL'. ALL COMPONENTS SHALL MEET CURRENT NATIONAL ELECTRIC CODE (NEC) AND BE UL LISTED FOR THE APPLICATION.

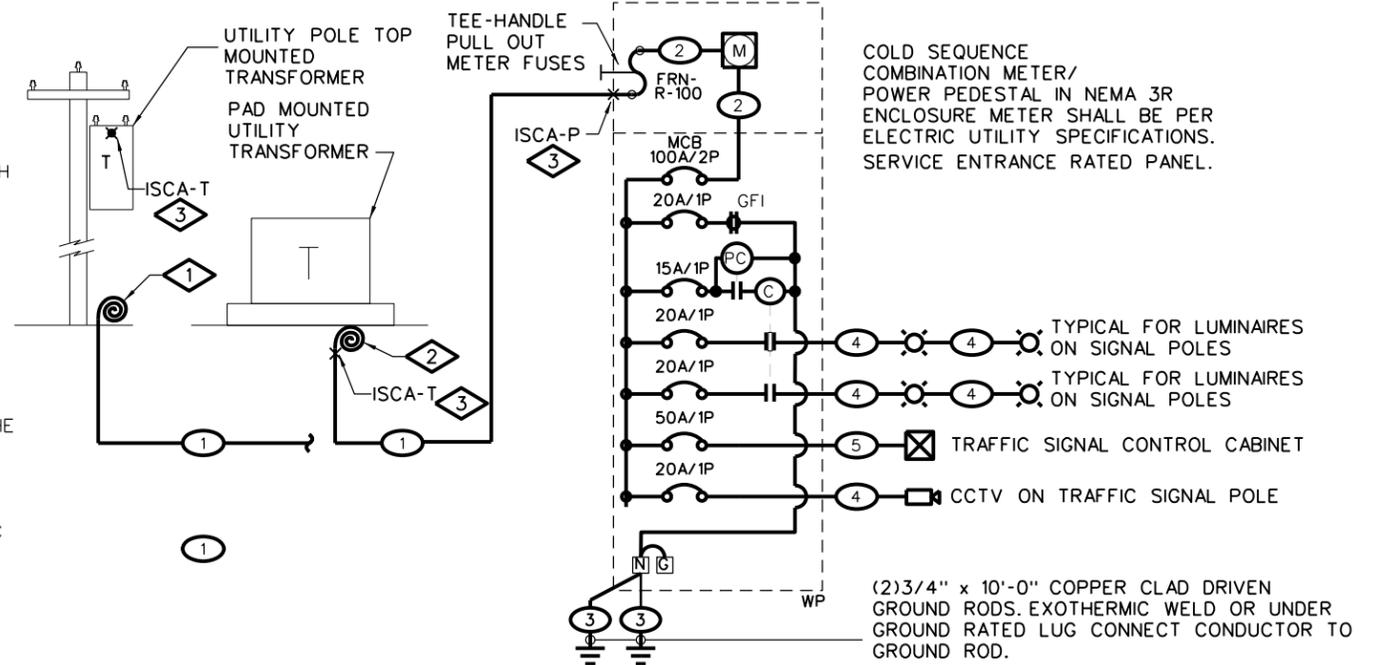


**COLD SEQUENCE METER POWER PEDESTAL ELEVATION DETAIL FOR TRAFFIC SIGNAL WITH CAMERA**

NOT TO SCALE

MOUNTING: PEDESTAL		PANEL "MPP_"		120/240V-1PH-3W	
FEEDER: BOTTOM		NEMA 3R ENCLOSURE SERVICE ENTRANCE RATED		100 AMPS MAIN BREAKER	
		BRANCH BREAKER			
		LEFT PHASE LOAD		RIGHT PHASE LOAD	
DESCRIPTION	Size	P	Ckt#	L1	L2
TRAFFIC SIGNAL POLE LIGHTING	20	1	1	240	180
TRAFFIC SIGNAL POLE LIGHTING	20	1	3	240	4800
MPP_ LIGHTING CONTROL CKT.	15	1	5	200	300
SPARE	20	1	7		
				440	240
				920	5040
				Total Connected V.A.	
				5960 = Total Connected VA Both Phases	
LOAD	CONNECTED	D.FACT.	Est. KVA	AMPS	
LIGHTING	480 VA	1.25	0.60		
RECEPTACLES (1ST 10000)	180 VA	1.00	0.18	180 VA=Total Receptacle Load	
RECEPTACLES (REMAINING)	0 VA	0.50	0.00		
MOTOR (LARGEST)	0 VA	1.25	0.00		
MOTORS (REMAINING)	0 VA	1.00	0.00		
ELECTRICAL HEATING	0 VA	1.25	0.00		
ELECTRICAL MISC.	5300 VA	1.00	5.30		
TOTAL ESTIMATED LOAD	5960 VA		6.08	25	

NOTE:  
ALL LIGHTING CONTROL CENTERS AND ELECTRICAL EQUIPMENT SHALL BE PROVIDED WITH "ARC-FLASH HAZARD WARNING" LABELS PER THE NATIONAL ELECTRIC CODE NEC 110.16 AND NFPA 70E-2015, AND ALL OTHER LABELS REQUIRED BY NFPA 70.



**FEEDER SCHEDULE**

- ① SEE THE "INDIVIDUAL COLD SEQUENCE MPP FAULT CURRENT TABLE FOR SIGNAL WITH LUMINAIRES AND CAMERA" ON THIS SHEET FOR THIS FOR THESE ISCA VALUES.
- ② INTERNAL FEEDER SUPPLIED WITH PEDESTAL
- ③ 1\*4 STRANDED BARE COPPER THROUGH FEEDER ENCLOSURE TO GROUND RODS.
- ④ (2\*10THWN CU & 1\*10GND) 2" PVC CONDUIT
- ⑤ (2\*6THWN CU & 1\*10GND) 2" PVC CONDUIT

**ONE-LINE NOTES:**

- ① COIL ENOUGH CONDUCTORS AT THE BASE OF THE POLE TO REACH THE TRANSFORMER TERMINALS AT THE TOP OF THE POLE. FINAL ROUTING OF CONDUCTORS UP THE POLE AND CONNECTION TO TRANSFORMER BY ELECTRIC UTILITY.
- ② COIL MINIMUM OF 5'-0" OF CONDUCTORS AT THE TRANSFORMER BASE. FINAL CONNECTION TO TRANSFORMER BY ELECTRIC UTILITY.
- ③ SEE THE "INDIVIDUAL COLD SEQUENCE MPP FAULT CURRENT TABLE FOR TRAFFIC CABINET" ON THIS SHEET FOR THIS FOR THESE ISCA VALUES.

**COLD SEQUENCE METER POWER PEDESTAL ONE-LINE DIAGRAM FOR TRAFFIC SIGNAL WITH CAMERA**

NOT TO SCALE

<b>Computer File Information</b>		<b>Sheet Revisions</b>		<b>Colorado Department of Transportation</b>	<b>TRAFFIC SIGNAL ONE-LINE DIAGRAMS</b>	<b>STANDARD PLAN NO.</b>	
Creation Date: 06/14/2023	Created By: KUCZKOWSKI	Date:	Comments:			S-613-4	
Last Modification Date: N/A	Last Modified By: CLANTON AND ASSOCIATES, INC.			2829 W. Howard Pl. Denver, CO 80204 Phone: 303-757-9654 FAX: 303-757-9219	Issued By: Traffic Safety & Engineering Branch	Standard Sheet No. 3 of 6	
CAD Ver.: Connect Edition	Scale: Not to Scale					Project Sheet Number:	



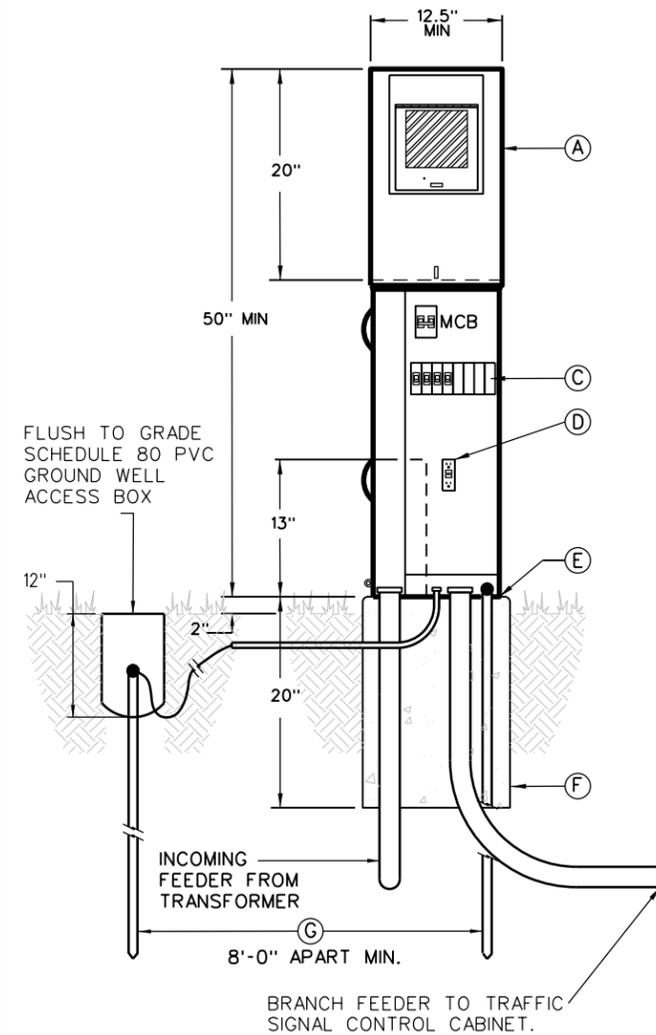
Traffic Safety & Engineering EB

**INDIVIDUAL HOT SEQUENCE MPP FAULT CURRENT TABLE FOR TRAFFIC CABINET**

METER POWER PEDESTAL	SERVICE MAIN CIRCUIT BRKR.	TRANSFORMER			SERVICE LATERAL FEEDER 1	MIN. CONDUCTOR LENGTH TO MPP ~	MAX. CONDUCTOR LENGTH MPP^	SHORT CIRCUIT AMPACITY 'ISCA-P' @ MIN. CONDUCTOR LENGTH	MINIMUM AIC RATING FOR MAIN CIRCUIT
		KVA	'ISCA-T'	SEC. VOLTAGE-PHASE					
NEW-MPP	100A-2P	15 kVA	4464 A	120/240V-1PH	(3#1 XHHW CU) 2" PVC	10-FT	190-FT	4,253 A	10,000 A
NEW-MPP	100A-2P	15 kVA	7440 A	120/240V-1PH	(3#1/0 XHHW CU) 2" PVC	15-FT	240-FT	4,212 A	10,000 A
NEW-MPP	100A-2P	25 kVA	7440 A	120/240V-1PH	(3#1 XHHW CU) 2" PVC	10-FT	190-FT	6,872 A	10,000 A
NEW-MPP	100A-2P	25 kVA	7440 A	120/240V-1PH	(3#2/0 XHHW CU) 2" PVC	30-FT	305-FT	6,399 A	10,000 A
NEW-MPP	100A-2P	50 kVA	14881 A	120/240V-1PH	(3#1 XHHW CU) 2" PVC	10-FT	190-FT	12,768 A	22,000 A
NEW-MPP	100A-2P	50 kVA	14881 A	120/240V-1PH	(3#1 XHHW CU) 2" PVC	35-FT	190-FT	9,423 A	10,000 A
NEW-MPP	100A-2P	50 kVA	14881 A	120/240V-1PH	(3#1/0 XHHW CU) 2" PVC	40-FT	240-FT	9,711 A	10,000 A
NEW-MPP	100A-2P	50 kVA	14881 A	120/240V-1PH	(3#2/0 XHHW CU) 2" PVC	50-FT	305-FT	9,646 A	10,000 A

~ = MINIMUM SERVICE LATERAL CONDUCTOR LENGTH FOR THE ISCA VALUE GIVEN. IF CONDUCTOR LENGTH IS LESS THAN THIS VALUE THE PANEL SHALL BE BRACED AT THE NEXT HIGHER AIC RATING CALCULATED BY AN ELECTRICAL ENGINEER.

^ = MAXIMUM FEEDER LENGTH TO MAINTAIN LESS THAN 2% VOLTAGE DROP.



**HOT SEQUENCE METER POWER PEDESTAL ELEVATION DETAIL FOR TRAFFIC SIGNAL**

NOT TO SCALE

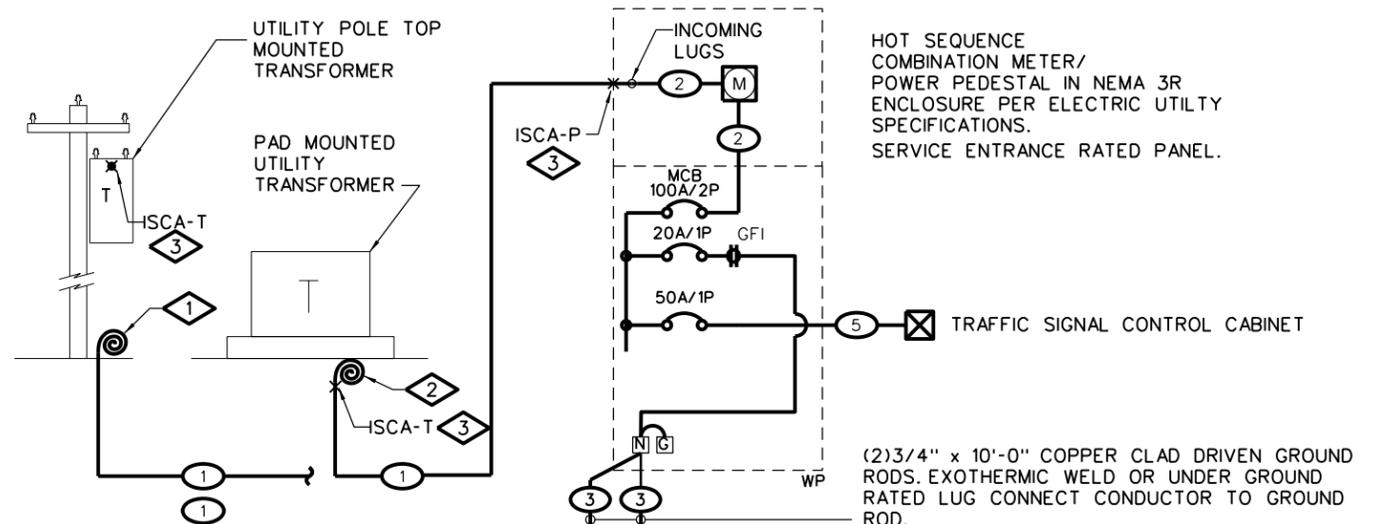
**COMPONENT LIST**

- (A) 200A METER SOCKET, 100A MCB, 120/240V, NEMA 3R COMBINATION SERVICE ENTRANCE RATED, HOT SEQUENCE, METER/POWER PEDESTAL WITH LEVER BYPASS, LOAD CENTER, AND MCB. SEE PANEL SCHEDULE ON THIS SHEET FOR SIZE OF MAIN AND NUMBER AND SIZE OF BRANCH BREAKERS. SET ON NEW CONCRETE PAD PLUMB AND LEVEL.
  - (C) SERVICE ENTRANCE PANEL BREAKER SECTION, FOR CUSTOMER LOADS. SEE PANEL SCHEDULES ON THIS SHEET FOR SIZE OF BREAKERS AND NUMBER OF POLES REQUIRED.
  - (D) BUILT-IN GFCI NEMA 5-20R, DUPLEX, GFCI MAINTENANCE RECEPTACLE FLUSH MOUNTED IN PANEL DEAD-FRONT.
  - (E) PROVIDE RECESSED CONCRETE PAD MOUNTING PLATE WITH L-BOLTS TO MATCH THE ENCLOSURE BASE BOLT PATTERN.
  - (F) OPTION 1: POLYMER CONCRETE PEDESTAL FOUNDATION WITH FIBERGLASS REINFORCEMENT. THE PAD SHALL BE CONTINUOUS CLOTH REINFORCEMENT ON THE INSIDE AND OUTSIDE PERIMETER. WEIGHT OF THE FOUNDATIONS SHALL BE STENCILED ON THE SIDEWALL OF THE FOUNDATION.  
 OPTION 2: PROVIDE 4000 PSI, RE-BAR RE-ENFORCE, CONCRETE WITH A MINIMUM DIRECT EARTH BURY DEPTH OF 18-INCH, 2-INCH OVERLAP OF THE ENCLOSURE ON ALL SIDES FRONT AND BACK AND 2-INCH EXPOSURE ABOVE GRADE. PROVIDE 3/4 INCH CHAMFERED EDGES. PROVIDE STRUCTURAL ENGINEER STAMPED DRAWING FOR PAD.
  - (G) 3/4"x 10'-0" LONG, COPPER-CLAD DRIVEN GROUND ROD WITH EXOTHERMIC WELD OR UNDERGROUND LUG CONNECT CONDUCTOR TO ROD. (2) RODS REQUIRED.
- NOTE: ALL COMPONENTS LISTED SHALL BE INCLUDED IN THE PAY ITEM '613-50109 METER POWER PEDESTAL'. ALL COMPONENTS SHALL MEET CURRENT NATIONAL ELECTRIC CODE (NEC) AND BE UL LISTED FOR THE APPLICATION.

MOUNTING: PEDESTAL		PANEL "MPP_"		120/240V-1PH-3W	
FEEDER: BOTTOM		NEMA 3R ENCLOSURE SERVICE ENTRANCE RATED		100 AMPS MAIN BREAKER	
		BRANCH BREAKER			
		LEFT PHASE LOAD		RIGHT PHASE LOAD	
DESCRIPTION	Size	P	Ckt#	L1	L2
SPARE	20	1	1		180
SPARE	20	1	3		4800
SPACE ONLY			5		
SPACE ONLY			7		
				0	0
				180	4800
				Total Connected V.A.	
				4980 = Total Connected VA Both Phases	
LOAD	CONNECTED	D.FACT.	Est. KVA	AMPS	
LIGHTING	0 VA	1.25	0.00		
RECEPTACLES (1ST 10000)	180 VA	1.00	0.18		
RECEPTACLES (REMAINING)	0 VA	0.50	0.00		
MOTOR (LARGEST)	0 VA	1.25	0.00		
MOTORS (REMAINING)	0 VA	1.00	0.00		
ELECTRICAL HEATING	0 VA	1.25	0.00		
ELECTRICAL MISC.	4800 VA	1.00	4.80		
TOTAL ESTIMATED LOAD	4980 VA		4.98	21	

180 VA = Total Receptacle Load

NOTE: ALL LIGHTING CONTROL CENTERS AND ELECTRICAL EQUIPMENT SHALL BE PROVIDED WITH "ARC-FLASH HAZARD WARNING" LABELS PER THE NATIONAL ELECTRIC CODE NEC 110.16 AND NFPA 70E, AND ALL OTHER LABELS REQUIRED BY NFPA 70.



**FEEDER SCHEDULE**

- (1) SEE THE "INDIVIDUAL HOT SEQUENCE MPP FAULT CURRENT TABLE FOR TRAFFIC CABINET" ON THIS SHEET FOR THIS FOR THESE ISCA VALUES.
- (2) INTERNAL FEEDER SUPPLIED WITH PEDESTAL
- (3) 1\*4 STRANDED BARE COPPER THROUGH FEEDER ENCLOSURE TO GROUND RODS.
- (4) (2\*6THWN CU & 1\*10GND) 2" PVC CONDUIT

**ONE-LINE NOTES:**

- (1) COIL ENOUGH CONDUCTORS AT THE BASE OF THE POLE TO REACH THE TRANSFORMER TERMINALS AT THE TOP OF THE POLE. FINAL ROUTING OF CONDUCTORS UP THE POLE AND CONNECTION TO TRANSFORMER BY ELECTRIC UTILITY.
- (2) COIL MINIMUM OF 5'-0" OF CONDUCTORS AT THE TRANSFORMER BASE. FINAL CONNECTION TO TRANSFORMER BY ELECTRIC UTILITY.
- (3) SEE THE "INDIVIDUAL HOT SEQUENCE MPP FAULT CURRENT TABLE FOR TRAFFIC CABINET" ON THIS SHEET FOR THIS FOR THESE ISCA VALUES.

**HOT SEQUENCE METER POWER PEDESTAL ONE-LINE DIAGRAM FOR TRAFFIC SIGNAL**

NOT TO SCALE

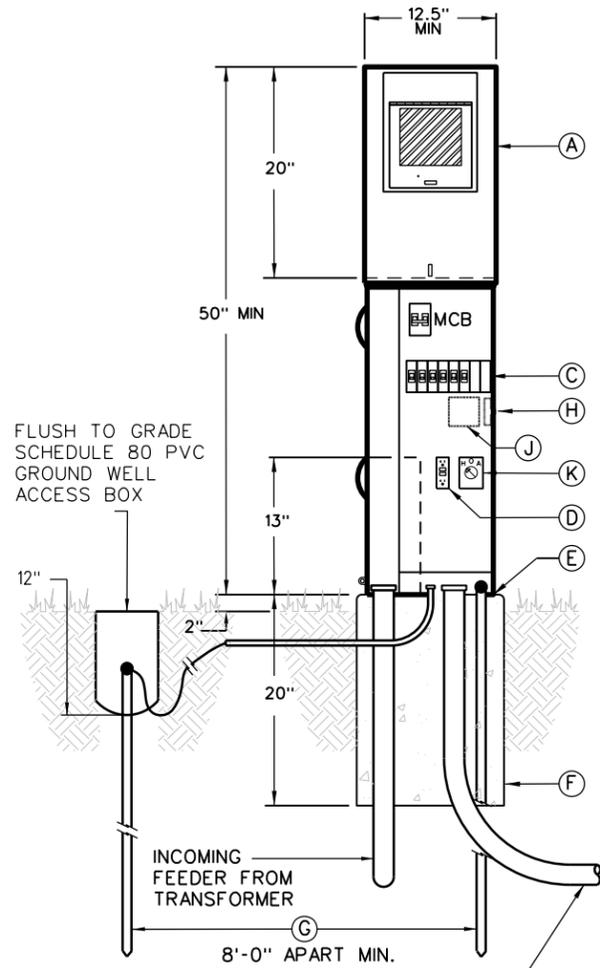
<b>Computer File Information</b>		<b>Sheet Revisions</b>		Colorado Department of Transportation 2829 W. Howard Pl. Denver, CO 80204 Phone: 303-757-9654 FAX: 303-757-9219	<b>TRAFFIC SIGNAL ONE-LINE DIAGRAMS</b>	<b>STANDARD PLAN NO.</b>	
Creation Date: 06/14/2023	Created By: KUCZKOWSKI	Date:	Comments:			S-613-4	
Last Modification Date: N/A	Last Modified By: CLANTON AND ASSOCIATES, INC.				Standard Sheet No. 4 of 6		
CAD Ver.: Connect Edition Scale: Not to Scale Units: English					Issued By: Traffic Safety & Engineering Branch	Project Sheet Number:	



Traffic Safety & Engineering EB

INDIVIDUAL HOT SEQUENCE MPP FAULT CURRENT TABLE FOR TRAFFIC SIGNAL WITH LUMINAIRES									
METER POWER PEDESTAL	SERVICE MAIN CIRCUIT BRKR.	TRANSFORMER			SERVICE LATERAL FEEDER 1	MIN. CONDUCTOR LENGTH TO MPP ~	MAX. CONDUCTOR LENGTH MPP^	SHORT CIRCUIT AMPACITY 'ISCA-P' @ MIN. CONDUCTOR LENGTH	MINIMUM AIC RATING FOR MAIN CIRCUIT
		KVA	'ISCA-T'	SEC. VOLTAGE-PHASE					
NEW-MPP_	100A-2P	15 kVA	4464 A	120/240V-1PH	(3#1 XHHW CU) 2" PVC	10-FT	190-FT	4,253 A	10,000 A
NEW-MPP_	100A-2P	15 kVA	7440 A	120/240V-1PH	(3#1/0 XHHW CU) 2" PVC	15-FT	240-FT	4,212 A	10,000 A
NEW-MPP_	100A-2P	25 kVA	7440 A	120/240V-1PH	(3#1 XHHW CU) 2" PVC	10-FT	190-FT	6,872 A	10,000 A
NEW-MPP_	100A-2P	25 kVA	7440 A	120/240V-1PH	(3#2/0 XHHW CU) 2" PVC	30-FT	305-FT	6,399 A	10,000 A
NEW-MPP_	100A-2P	50 kVA	14881 A	120/240V-1PH	(3#1 XHHW CU) 2" PVC	10-FT	190-FT	12,768 A	22,000 A
NEW-MPP_	100A-2P	50 kVA	14881 A	120/240V-1PH	(3#1 XHHW CU) 2" PVC	35-FT	190-FT	9,423 A	10,000 A
NEW-MPP_	100A-2P	50 kVA	14881 A	120/240V-1PH	(3#1/0 XHHW CU) 2" PVC	40-FT	240-FT	9,711 A	10,000 A
NEW-MPP_	100A-2P	50 kVA	14881 A	120/240V-1PH	(3#2/0 XHHW CU) 2" PVC	50-FT	305-FT	9,646 A	10,000 A

~ = MINIMUM SERVICE LATERAL CONDUCTOR LENGTH FOR THE ISCA VALUE GIVEN. IF CONDUCTOR LENGTH IS LESS THAN THIS VALUE THE PANEL SHALL BE BRACED AT THE NEXT HIGHER AIC RATING CALCULATED BY AN ELECTRICAL ENGINEER.  
 ^ = MAXIMUM FEEDER LENGTH TO MAINTAIN LESS THAN 2% VOLTAGE DROP.



**COMPONENT LIST**

- (A) 200A METER SOCKET, 100A MCB, 120/240V, NEMA 3R COMBINATION SERVICE ENTRANCE RATED, HOT SEQUENCE, METER/POWER PEDESTAL WITH LEVER BYPASS, LOAD CENTER, AND MCB. SEE PANEL SCHEDULE ON THIS SHEET FOR SIZE OF MAIN AND NUMBER AND SIZE OF BRANCH BREAKERS. SET ON NEW CONCRETE PAD PLUMB AND LEVEL.
- (C) SERVICE ENTRANCE PANEL BREAKER SECTION, FOR CUSTOMER LOADS. SEE PANEL SCHEDULES ON THIS SHEET FOR SIZE OF BREAKERS AND NUMBER OF POLES REQUIRED.
- (D) BUILT-IN GFCI NEMA 5-20R, DUPLEX, GFCI MAINTENANCE RECEPTACLE FLUSH MOUNTED IN PANEL DEAD-FRONT.
- (E) PROVIDE RECESSED CONCRETE PAD MOUNTING PLATE WITH L-BOLTS TO MATCH THE ENCLOSURE BASE BOLT PATTERN.
- (F) OPTION 1: POLYMER CONCRETE PEDESTAL FOUNDATION WITH FIBERGLASS REINFORCEMENT. THE PAD SHALL BE CONTINUOUS CLOTH REINFORCEMENT ON THE INSIDE AND OUTSIDE PERIMETER. WEIGHT OF THE FOUNDATIONS SHALL BE STENCILED ON THE SIDEWALL OF THE FOUNDATION.  
 OPTION 2: PROVIDE 4000 PSI, RE-BAR RE-ENFORCE, CONCRETE WITH A MINIMUM DIRECT EARTH BURY DEPTH OF 18-INCH, 2-INCH OVERLAP OF THE ENCLOSURE ON ALL SIDES FRONT AND BACK AND 2-INCH EXPOSURE ABOVE GRADE. PROVIDE 3/4-INCH CHAMFERED EDGES. PROVIDE STRUCTURAL ENGINEER STAMPED DRAWING FOR PAD.
- (G) 3/4"x 10'-0" LONG, COPPER-CLAD DRIVEN GROUND ROD WITH EXOTHERMIC WELD OR UNDERGROUND LUG CONNECT CONDUCTOR TO ROD. (2) RODS REQUIRED.
- (H) BUILT-IN PHOTOCELL FOR ON/OFF CONTROL OF LUMINAIRES ON SIGNALS POLES.
- (J) BUILT-IN, 2-POLE 20A, LIGHTING CONTACTOR FOR ON/OFF CONTROL OF LIGHTS ON SIGNAL POLES
- (K) OPTIONAL HAND-OFF-AUTO SWITCH WHEN ITEMS 'H' AND 'J' ABOVE ARE USED. PROVIDE THIS HOA SWITCH WITH THE PHOTOCELL CONTROL WIRED IN THE AUTO POSITION.

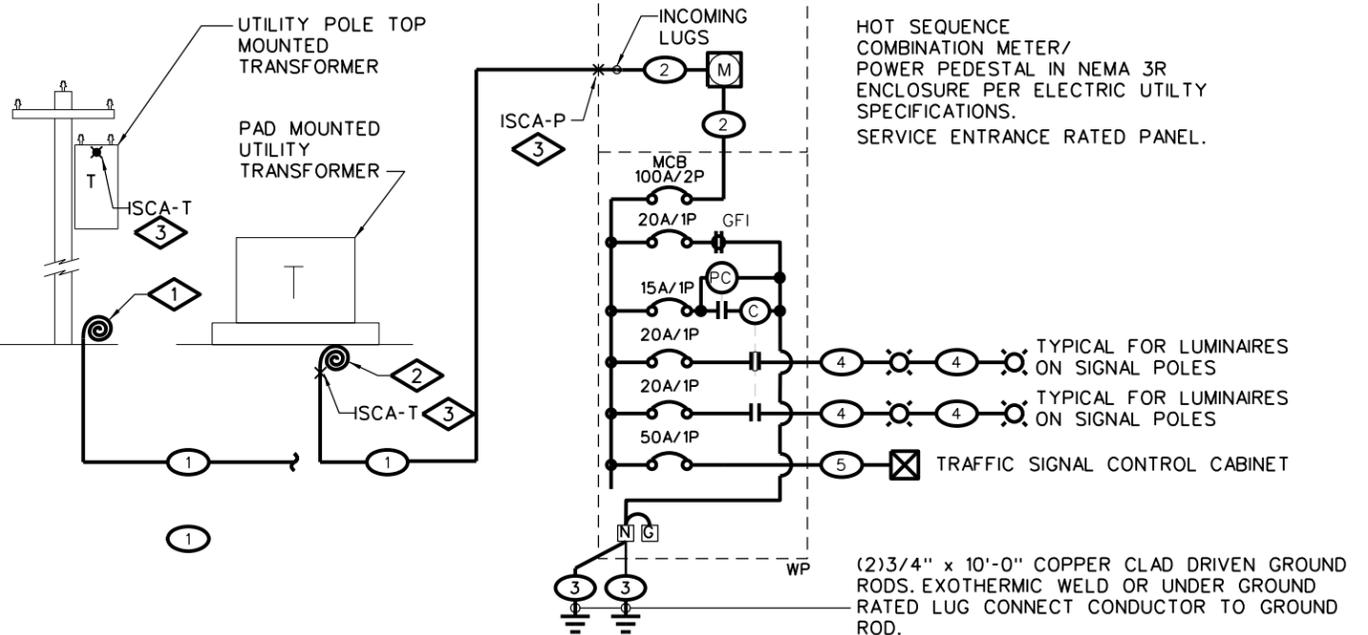
NOTE:  
 ALL COMPONENTS LISTED SHALL BE INCLUDED IN THE PAY ITEM '613-50109 METER POWER PEDESTAL'. ALL COMPONENTS SHALL MEET CURRENT NATIONAL ELECTRIC CODE (NEC) AND BE UL LISTED FOR THE APPLICATION.

**HOT SEQUENCE METER POWER PEDESTAL ELEVATION DETAIL FOR TRAFFIC SIGNAL WITH LUMINAIRES**

NOT TO SCALE

MOUNTING: PEDESTAL		PANEL "MPP_"		120/240V-1PH-3W	
FEEDER: BOTTOM		NEMA 3R ENCLOSURE SERVICE ENTRANCE RATED		100 AMPS MAIN BREAKER	
		BRANCH BREAKER			
		LEFT PHASE LOAD		RIGHT PHASE LOAD	
DESCRIPTION		Size	P	Ckt#	DESCRIPTION
TRAFFIC SIGNAL POLE LIGHTING	20	1	1	240	MPP_ MAINTENANCE RECEPT.
TRAFFIC SIGNAL POLE LIGHTING	20	1	3	240	TRAFFIC CONTROL CABINET
MPP_ LIGHTING CONTROL CKT.	15	1	5	200	SPACE ONLY
SPARE	20	1	7		SPACE ONLY
		440	240		180
		620	5040	Total Connected V.A.	
				5660 = Total Connected VA Both Phases	
LOAD	CONNECTED	D.FACT.	Est. KVA	AMPS	
LIGHTING	480 VA	1.25	0.60		
RECEPTACLES (1ST 10000)	180 VA	1.00	0.18	180 VA=Total Receptacle Load	
RECEPTACLES (REMAINING)	0 VA	0.50	0.00		
MOTOR (LARGEST)	0 VA	1.25	0.00		
MOTORS (REMAINING)	0 VA	1.00	0.00		
ELECTRICAL HEATING	0 VA	1.25	0.00		
ELECTRICAL MISC.	5000 VA	1.00	5.00		
TOTAL ESTIMATED LOAD	5660 VA		5.78	24	

NOTE:  
 ALL LIGHTING CONTROL CENTERS AND ELECTRICAL EQUIPMENT SHALL BE PROVIDED WITH "ARC-FLASH HAZARD WARNING" LABELS PER THE NATIONAL ELECTRIC CODE NEC 110.16 AND NFPA 70E-2015, AND ALL OTHER LABELS REQUIRED BY NFPA 70.



**FEEDER SCHEDULE**

- (1) SEE THE "INDIVIDUAL HOT SEQUENCE MPP FAULT CURRENT TABLE FOR TRAFFIC SIGNAL WITH LUMINAIRES" ON THIS SHEET FOR THIS FOR THESE ISCA VALUES.
- (2) INTERNAL FEEDER SUPPLIED WITH PEDESTAL
- (3) 1\*4 STRANDED BARE COPPER THROUGH FEEDER ENCLOSURE TO GROUND RODS.
- (4) (2\*10THWN CU & 1\*10GND) 2" PVC CONDUIT
- (5) (2\*6THWN CU & 1\*10GND) 2" PVC CONDUIT

**ONE-LINE NOTES:**

- (1) COIL ENOUGH CONDUCTORS AT THE BASE OF THE POLE TO REACH THE TRANSFORMER TERMINALS AT THE TOP OF THE POLE. FINAL ROUTING OF CONDUCTORS UP THE POLE AND CONNECTION TO TRANSFORMER BY ELECTRIC UTILITY.
- (2) COIL MINIMUM OF 5'-0" OF CONDUCTORS AT THE TRANSFORMER BASE. FINAL CONNECTION TO TRANSFORMER BY ELECTRIC UTILITY.
- (3) SEE THE "INDIVIDUAL HOT SEQUENCE MPP FAULT CURRENT TABLE FOR TRAFFIC CABINET" ON THIS SHEET FOR THESE ISCA VALUES.

**HOT SEQUENCE METER POWER PEDESTAL ONE-LINE DIAGRAM FOR TRAFFIC SIGNAL WITH LUMINAIRES**

NOT TO SCALE

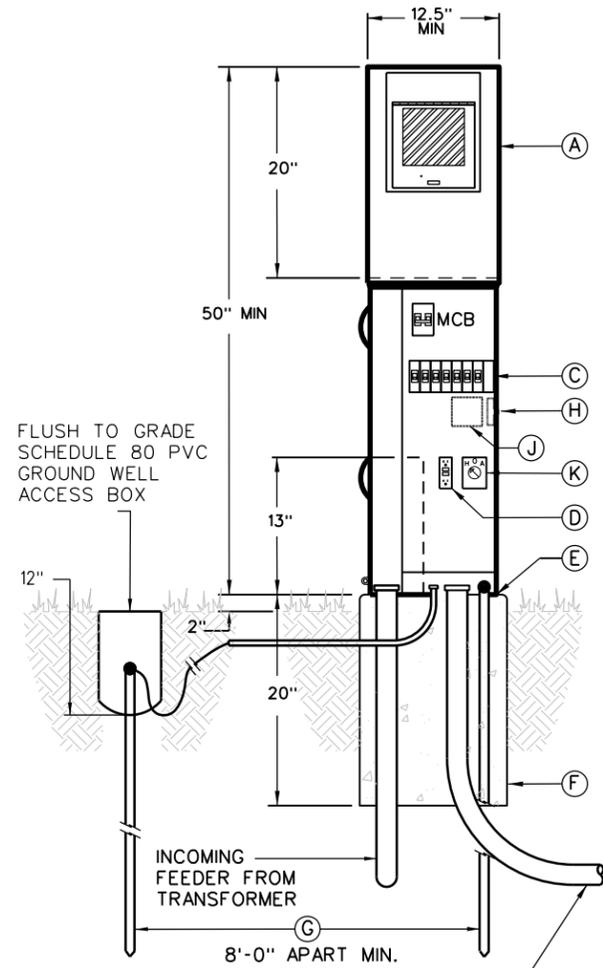
<b>Computer File Information</b>		<b>Sheet Revisions</b>		<p>Colorado Department of Transportation          2829 W. Howard Pl.          Denver, CO 80204          Phone: 303-757-9654          FAX: 303-757-9219</p>	<p><b>TRAFFIC SIGNAL ONE-LINE DIAGRAMS</b></p> <p>Issued By: Traffic Safety &amp; Engineering Branch</p>	<b>STANDARD PLAN NO.</b>	
Creation Date: 06/14/2023		Date:	Comments:			S-613-4	
Created By: KUCZKOWSKI						Standard Sheet No. 5 of 6	
Last Modification Date: N/A						Project Sheet Number:	
Last Modified By: CLANTON AND ASSOCIATES, INC.							
CAD Ver.: Connect Edition Scale: Not to Scale Units: English				Traffic Safety & Engineering EB			

**INDIVIDUAL HOT SEQUENCE MPP FAULT CURRENT TABLE FOR SIGNAL WITH LUMINAIRES AND CAMERAS**

METER POWER PEDESTAL	SERVICE MAIN CIRCUIT BRKR.	TRANSFORMER			SERVICE LATERAL FEEDER 1	MIN. CONDUCTOR LENGTH TO MPP ~	MAX. CONDUCTOR LENGTH MPP^	SHORT CIRCUIT AMPACITY 'ISCA-P' @ MIN. CONDUCTOR LENGTH	MINIMUM AIC RATING FOR MAIN CIRCUIT
		KVA	'ISCA-T'	SEC. VOLTAGE-PHASE					
NEW-MPP	100A-2P	15 kVA	4464 A	120/240V-1PH	(3#1 XHHW CU) 2" PVC	10-FT	190-FT	4,253 A	10,000 A
NEW-MPP	100A-2P	15 kVA	7440 A	120/240V-1PH	(3#1/0 XHHW CU) 2" PVC	15-FT	240-FT	4,212 A	10,000 A
NEW-MPP	100A-2P	25 kVA	7440 A	120/240V-1PH	(3#1 XHHW CU) 2" PVC	10-FT	190-FT	6,872 A	10,000 A
NEW-MPP	100A-2P	25 kVA	7440 A	120/240V-1PH	(3#2/0 XHHW CU) 2" PVC	30-FT	305-FT	6,399 A	10,000 A
NEW-MPP	100A-2P	50 kVA	14881 A	120/240V-1PH	(3#1 XHHW CU) 2" PVC	10-FT	190-FT	12,768 A	22,000 A
NEW-MPP	100A-2P	50 kVA	14881 A	120/240V-1PH	(3#1 XHHW CU) 2" PVC	35-FT	190-FT	9,423 A	10,000 A
NEW-MPP	100A-2P	50 kVA	14881 A	120/240V-1PH	(3#1/0 XHHW CU) 2" PVC	40-FT	240-FT	9,711 A	10,000 A
NEW-MPP	100A-2P	50 kVA	14881 A	120/240V-1PH	(3#2/0 XHHW CU) 2" PVC	50-FT	305-FT	9,646 A	10,000 A

~ = MINIMUM SERVICE LATERAL CONDUCTOR LENGTH FOR THE ISCA VALUE GIVEN. IF CONDUCTOR LENGTH IS LESS THAN THIS VALUE THE PANEL SHALL BE BRACED AT THE NEXT HIGHER AIC RATING CALCULATED BY AN ELECTRICAL ENGINEER.

^ = MAXIMUM FEEDER LENGTH TO MAINTAIN LESS THAN 2% VOLTAGE DROP.



**COMPONENT LIST**

- (A) 200A METER SOCKET, 100A MCB, 120/240V, NEMA 3R COMBINATION SERVICE ENTRANCE RATED, HOT SEQUENCE, METER/POWER PEDESTAL WITH LEVER BYPASS, LOAD CENTER, AND MCB. SEE PANEL SCHEDULE ON THIS SHEET FOR SIZE OF MAIN AND NUMBER AND SIZE OF BRANCH BREAKERS. SET ON NEW CONCRETE PAD PLUMB AND LEVEL.
- (C) SERVICE ENTRANCE PANEL BREAKER SECTION, FOR CUSTOMER LOADS. SEE PANEL SCHEDULES ON THIS SHEET FOR SIZE OF BREAKERS AND NUMBER OF POLES REQUIRED.
- (D) BUILT-IN GFCI NEMA 5-20R, DUPLEX, GFCI MAINTENANCE RECEPTACLE FLUSH MOUNTED IN PANEL DEAD-FRONT.
- (E) PROVIDE RECESSED CONCRETE PAD MOUNTING PLATE WITH L-BOLTS TO MATCH THE ENCLOSURE BASE BOLT PATTERN.
- (F) OPTION 1: POLYMER CONCRETE PEDESTAL FOUNDATION WITH FIBERGLASS REINFORCEMENT. THE PAD SHALL BE CONTINUOUS CLOTH REINFORCEMENT ON THE INSIDE AND OUTSIDE PERIMETER. WEIGHT OF THE FOUNDATIONS SHALL BE STENCILED ON THE SIDEWALL OF THE FOUNDATION.  
OPTION 2: PROVIDE 4000 PSI, RE-BAR RE-ENFORCE, CONCRETE WITH A MINIMUM DIRECT EARTH BURY DEPTH OF 18-INCH, 2-INCH OVERLAP OF THE ENCLOSURE ON ALL SIDES FRONT AND BACK AND 2-INCH EXPOSURE ABOVE GRADE. PROVIDE 3/4-INCH CHAMFERED EDGES. PROVIDE STRUCTURAL ENGINEERED STAMPED DRAWING FOR PAD.
- (G) 3/4"x 10'-0" LONG, COPPER-CLAD DRIVEN GROUND ROD WITH EXOTHERMIC WELD OR UNDERGROUND LUG CONNECT CONDUCTOR TO ROD. (2) RODS REQUIRED.
- (H) BUILT-IN PHOTOCELL FOR ON/OFF CONTROL OF LUMINAIRES ON SIGNALS POLES.
- (J) BUILT-IN, 2-POLE 20A, LIGHTING CONTACTOR FOR ON/OFF CONTROL OF LIGHTS ON SIGNAL POLES
- (K) OPTIONAL HAND-OFF-AUTO SWITCH WHEN ITEMS 'H' AND 'J' ABOVE ARE USED. PROVIDE THIS HOA SWITCH WITH THE PHOTOCELL CONTROL WIRED IN THE AUTO POSITION.

NOTE:  
ALL COMPONENTS LISTED SHALL BE INCLUDED IN THE PAY ITEM '613-50109 METER POWER PEDESTAL'. ALL COMPONENTS SHALL MEET CURRENT NATIONAL ELECTRIC CODE (NEC) AND BE UL LISTED FOR THE APPLICATION.

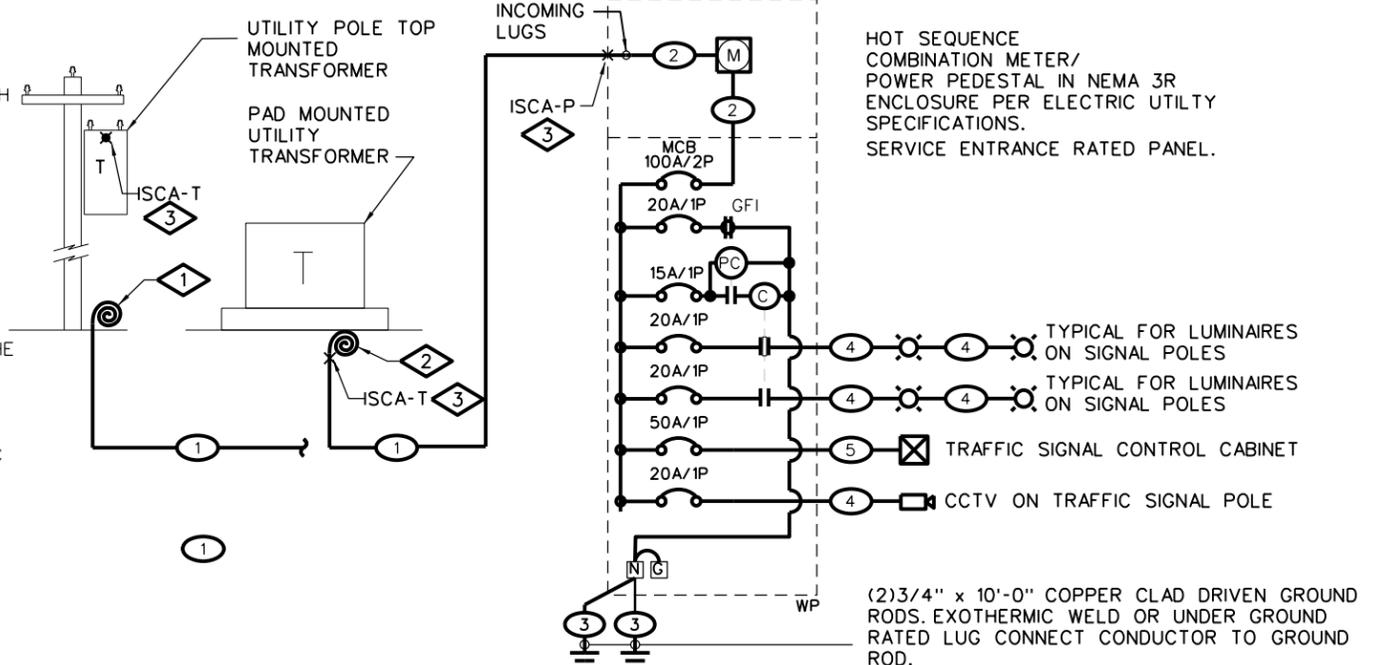
**HOT SEQUENCE METER POWER PEDESTAL ELEVATION DETAIL FOR TRAFFIC SIGNAL WITH CAMERA**

NOT TO SCALE

MOUNTING: PEDESTAL		PANEL "MPP"		120/240V-1PH-3W	
FEEDER: BOTTOM		NEMA 3R ENCLOSURE SERVICE ENTRANCE RATED		100 AMPS MAIN BREAKER	
		BRANCH BREAKER			
		LEFT PHASE LOAD		RIGHT PHASE LOAD	
DESCRIPTION	Size	P	Ckt#	L1	L2
TRAFFIC SIGNAL POLE LIGHTING	20	1	1	240	
TRAFFIC SIGNAL POLE LIGHTING	20	1	3	240	
MPP LIGHTING CONTROL CKT.	15	1	5	200	
SPARE	20	1	7		
				440	240
				920	5040
				Total Connected V.A.	
				5960 = Total Connected VA Both Phases	
LOAD	CONNECTED	D.FACT.	Est. KVA	AMPS	
LIGHTING	480 VA	1.25	0.60		
RECEPTACLES (1ST 10000)	180 VA	1.00	0.18		
RECEPTACLES (REMAINING)	0 VA	0.50	0.00		
MOTOR (LARGEST)	0 VA	1.25	0.00		
MOTORS (REMAINING)	0 VA	1.00	0.00		
ELECTRICAL HEATING	0 VA	1.25	0.00		
ELECTRICAL MISC.	5300 VA	1.00	5.30		
TOTAL ESTIMATED LOAD	5960 VA		6.08	25	

180 VA = Total Receptacle Load

NOTE:  
ALL LIGHTING CONTROL CENTERS AND ELECTRICAL EQUIPMENT SHALL BE PROVIDED WITH "ARC-FLASH HAZARD WARNING" LABELS PER THE NATIONAL ELECTRIC CODE NEC 110.16 AND NFPA 70E-2015, AND ALL OTHER LABELS REQUIRED BY NFPA 70.



**FEEDER SCHEDULE**

- (1) SEE THE "INDIVIDUAL HOT SEQUENCE MPP FAULT CURRENT TABLE FOR SIGNAL WITH LUMINAIRES AND CAMERAS" ON THIS SHEET FOR THIS FOR THESE ISCA VALUES.
- (2) INTERNAL FEEDER SUPPLIED WITH PEDESTAL
- (3) 1\*4 STRANDED BARE COPPER THROUGH FEEDER ENCLOSURE TO GROUND RODS.
- (4) (2\*10THWN CU & 1\*10GND) 2" PVC CONDUIT (2\*6THWN CU & 1\*10GND) 2" PVC CONDUIT

**ONE-LINE NOTES:**

- (1) COIL ENOUGH CONDUCTORS AT THE BASE OF THE POLE TO REACH THE TRANSFORMER TERMINALS AT THE TOP OF THE POLE. FINAL ROUTING OF CONDUCTORS UP THE POLE AND CONNECTION TO TRANSFORMER BY ELECTRIC UTILITY.
- (2) COIL MINIMUM OF 5'-0" OF CONDUCTORS AT THE TRANSFORMER BASE. FINAL CONNECTION TO TRANSFORMER BY ELECTRIC UTILITY.
- (3) SEE THE "INDIVIDUAL HOT SEQUENCE MPP FAULT CURRENT TABLE FOR TRAFFIC CABINET" ON THIS SHEET FOR THIS FOR THESE ISCA VALUES.

**HOT SEQUENCE METER POWER PEDESTAL ONE-LINE DIAGRAM FOR TRAFFIC SIGNAL WITH CAMERA**

NOT TO SCALE

Computer File Information		Sheet Revisions		Colorado Department of Transportation 2829 W. Howard Pl. Denver, CO 80204 Phone: 303-757-9654 FAX: 303-757-9219	TRAFFIC SIGNAL ONE-LINE DIAGRAMS	STANDARD PLAN NO.			
Creation Date: 06/14/2023		Date:	Comments			Traffic Safety & Engineering	EB	S-613-4	
Created By: KUCZKOWSKI								Standard Sheet No. 6 of 6	
Last Modification Date: N/A				Project Sheet Number:					
Last Modified By: CLANTON AND ASSOCIATES, INC.				Issued By: Traffic Safety & Engineering Branch					
CAD Ver.: Connect Edition	Scale: Not to Scale	Units: English							