

**ELECTRICAL GENERAL NOTES**

- ALL VEHICLE AND PEDESTRIAN SIGNAL HEADS SHALL HAVE 12" L.E.D. SECTIONS. ALL MOUNTING HARDWARE, SIGNAL POSTS, AND BASES SHALL BE UNPAINTED ALUMINUM. ALL BOLTS, SCREWS, NUTS AND WASHERS SHALL BE STAINLESS STEEL. ANTI-SEIZE PASTE COMPOUND SHALL BE USED ON ALL MOUNTING HARDWARE FIELD CONNECTIONS.
- BACKPLATES SHALL BE ABS PLASTIC.
- THE LOCATION OF MAST ARM SUPPORTS SHALL BE APPROVED BY THE ENGINEER BEFORE FOUNDATIONS ARE CONSTRUCTED. MAST ARM POLES SHALL BE LOCATED A MINIMUM OF 10 FEET FROM THE EDGE OF PAVEMENT OR 2 FEET FROM THE EDGE OF SHOULDER, WHICHEVER DISTANCE IS GREATER. IN CURBED SECTIONS, THE MAST ARM POLES SHALL BE LOCATED A MINIMUM OF 5 FEET FROM THE FACE OF THE CURB. THESE DISTANCES ARE TO THE NEAR FACE OF THE MAST ARM POLE. ALL MAST ARMS AND POLES SHALL BE GALVANIZED.
- ACTUAL DEPTHS OF THE CONCRETE FOUNDATIONS FOR THE SIGNAL POLES AND MAST ARM SUPPORT POLES ARE AS FOLLOWS:

FAP 312 (ILLINOIS ROUTE 3) & FAP 829 (ILLINOIS ROUTE 156)

NORTHEAST CORNER MAST ARM: 15'-0" DEEP  
 NORTHEAST CORNER POLE: 3'-0" DEEP  
 SOUTHEAST CORNER MAST ARM: 15'-0" DEEP  
 SOUTHEAST CORNER POLE: 3'-0" DEEP  
 SOUTHWEST CORNER MAST ARM: 15'-0" DEEP  
 SOUTHWEST CORNER POLE: 3'-0" DEEP  
 SOUTHWEST CORNER POLE: 3'-0" DEEP  
 (PEDESTRIAN SIGNALS)  
 NORTHWEST CORNER MAST ARM: 15'-0" DEEP

THESE DEPTHS ARE DETERMINED FROM THE SOIL BORING DATA.

- ALL TRAFFIC SIGNAL CABLES SHALL BE #14 AWG STRANDED COPPER UNLESS OTHERWISE SPECIFIED.
- THE LOCATION OF ALL DETECTOR LOOPS SHALL BE APPROVED BY THE ENGINEER BEFORE ANY SLOTS ARE SAWED IN THE PAVEMENT.
- DETECTOR LOOP LEAD-IN SPLICES SHALL BE MADE IN A HANDHOLE PER ARTICLE 873.03 OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AND STANDARD DRAWING 886001. CONDUCTORS SHALL BE SPLICED IN A RIGID MOLD. ROSIN-CORE SOLDER SHALL BE USED.
- CALL DELAY SHALL NOT FUNCTION WHEN THE RELATED PHASES ARE IN THE GREEN MODE.
- ALL HANDHOLES SHALL BE CAST-IN-PLACE PORTLAND CEMENT CONCRETE (PER ARTICLE 814.03(B)), THE CAST IN PLACE LEGEND IN THE COVER SHALL BE "TRAFFIC SIGNALS". SLOPE HANDHOLE COVERS TO MATCH PROPOSED GRADE ELEVATIONS.
- ALL UTILITIES SHALL BE LOCATED IN THE FIELD PRIOR TO ANY ATTEMPT TO CONSTRUCT ANY COMPONENT OF THE VARIOUS TRAFFIC SIGNAL INSTALLATION. AGENCIES KNOWN TO HAVE UNDERGROUND FACILITIES WITHIN THE LIMITS OF THIS IMPROVEMENT ARE THE FOLLOWING: MEMBER OF J.U.L.I.E. PHONE (800) 892-0123 ARE INDICATED BY \* (CALL ONE WEEK BEFORE YOU PLAN TO DIG).
  - \* CITY OF WATERLOO
  - \* HTC
  - \* MONROE COUNTY ELECTRIC CO-OP
  - \* CHARTER
- ALL INDUCTIVE LOOP DETECTORS SUPPLIED FOR THIS PROJECT SHALL HAVE THE CAPACITY OF OPERATING WITH BOTH DELAY AND EXTENSION MODES ACTIVE, IF A TIME SETTING IS PROGRAMMED. THEY SHALL BE RACK MOUNTED.
- A 1/4" NYLON PULL ROPE SHALL BE FURNISHED AND INSTALLED IN ALL SIGNAL CONDUITS, THIS WORK SHALL BE INCLUDED WITH THE CONDUIT PAY ITEM.
- SEE SPECIAL PROVISIONS FOR TRAFFIC CONTROL AND CONSTRUCTION STAGING REQUIREMENTS.
- RELOCATE 4 EXISTING TRAFFIC SIGNAL BACK PLATES TO NEW SIGNAL HEADS. THE QUANTITY OF 9 NEW BACK PLATES REFLECTS 9 ADDITIONAL SIGNAL HEADS.

**STANDARDS**

- 720001
- 720016
- 805001
- 814001
- 814006
- 857001
- 873001
- 877001
- 878001
- 880006
- 886001
- 886006

**DETECTOR LOOP REQUIREMENTS AND CALCULATIONS  
 FOR FAP 312 (ILLINOIS ROUTE 3) AND FAP 829 (ILLINOIS ROUTE 156)**

LOOP	PHASE (Ø)	LOOP SIZE(FT)	REQUIRED # OF TURNS	CALCULATED INDUCTANCE MICROHENRIES (µH)	CALCULATED RESISTANCE OHMS (Ω)
1. SB LT CD	1	6'X50' (Ø)	3-6-3	812.0	2.18
2. SB THRU CD A	6	6'X50' (Ø)	3-6-3	810.9	2.16
3. SB THRU CD B	6	6'X50' (Ø)	3-6-3	808.2	2.10
4. SB RT CD	6	6'X50' (Ø)	3-6-3	793.7	1.77
5. SB THRU CCO A	6	6'X6'	7	447.2	2.27
6. SB THRU CCO B	6	6'X6'	7	444.6	2.21
7. NB LT CD	5	6'X50' (Ø)	3-6-3	894.9	4.07
8. NB THRU CD A	2	6'X50' (Ø)	3-6-3	892.0	4.00
9. NB THRU CD B	2	6'X50' (Ø)	3-6-3	889.2	3.94
10. NB THRU CCO A	2	6'X6'	7	544.0	4.47
11. NB THRU CCO B	2	6'X6'	7	541.4	4.41
12. EB LT CD A	7	6'X50' (Ø)	3-6-3	803.2	1.98
13. EB LT CD B	7	6'X50' (Ø)	3-6-3	805.8	2.04
14. EB THRU CD	4	6'X50' (Ø)	3-6-3	838.4	2.78
15. EB LT CCO	7	6'X6'	7	438.9	2.08
16. EB THRU CCO	4	6'X6'	7	434.5	1.98
17. WB LT CD	3	6'X50' (Ø)	3-6-3	867.0	3.43
18. WB THRU CD	8	6'X50' (Ø)	3-6-3	864.3	3.37
19. WB RT CD	8	6'X50' (Ø)	3-6-3	862.6	3.33
20. WB THRU CCO	8	6'X6'	7	479.6	3.00

THE ABOVE VALUES ARE CALCULATED OF COMBINED LOOP AND LEAD-IN INDUCTANCE AND RESISTANCE. ACTUAL MEASURED VALUES SHOULD BE WITHIN +/- 20% OF THESE VALUES.

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