MN/DOT SPECIFICATION FOR A
RURAL LIGHTING AND INTERSECTION FLASHER CABINET

CABINET TYPE: RLF
04/25/2016
SPECIFICATIONS FOR A
RURAL LIGHTING AND FLASHER SERVICE CABINET

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1. GENERAL

1.1. The Rural Lighting and Flasher Service Cabinet (Type RLF) and all sub-assemblies shall be listed by a National Recognized Testing Laboratory (NRTL) as defined by the U.S. Department of Labor. The testing laboratory must be listed by OSHA in its scope of recognition for the applicable tests being conducted as required by this specification. A list of recognized testing labs for products sold in the United States may be found on the U.S. Department of Labor’s web site: http://www.osha.gov/

1.2. Shall be listed and labeled by a NRTL as being in compliance with UL508 and UL508A, suitable for use as service equipment and approved for outdoor use.

1.3. Shall have a NEMA 3R rating for the enclosure.

1.4. Shall provide electrical service for highway lighting.

1.5. Shall provide photoelectric control for highway lighting.

1.6. Shall provide flash power for intersection flashers.

1.7. Shall be in compliance with the current edition of the National Electrical Code.

1.8. Shall be in compliance with current edition of the National Fire Protection Association (NFPA) 70E Standard for Electrical Safety In the Workplace.

2. CABINET ENCLOSURE

2.1. Shall be a pad mounted, rain tight enclosure with pad mounting gasket.

2.2. Shall be rectangular in shape with the top of the cabinet extending over the front door and back wall.

2.3. Shall have outside dimensions of 60 inches high, by 20 inches wide, by 20 inches deep.

2.4. Shall have the roof of the cabinet extend beyond the outer edge of the front door and back wall of the cabinet. This overhang will reduce the amount of water that could potentially collect at the sealed top of the cabinet door opening.

2.4.1. Shall have Cross-Brakes in the roof.

2.5. Shall have two separate compartments. A front and back compartment.

2.5.1. The front compartment shall be from the bottom of the cabinet to the top (load side wire way). This compartment shall house all the load side distribution equipment.

2.5.1.1. Shall have an anodized aluminum dead front door which when open allows full access to all the components installed in the load side wire way.

2.5.1.2. Shall have a full length exterior front door allowing access to all the components installed in the front compartment.
2.5.2. The back compartment shall be divided into two sections, top and bottom. From the bottom of the cabinet to the entrance of the meter socket shall be one section (line side utility wire way) and at the top of the cabinet shall be the integral meter socket housing including a removable cover.

2.5.2.1. Shall have a cover for the bottom (line side utility wire way) that is attached to the cabinet with captive fasteners.

2.5.2.2. Shall have the bottom of the cover a minimum of 9 inches from the base of the cabinet.

2.5.2.3. Shall have provisions for the utility to seal the line side wire way to prevent unauthorized access. The seal would have to be removed to gain access to the line side utility wire way.

2.6. Shall provide for integral mounting of the meter socket internal to the cabinet that allows the meter to be exposed on the exterior of the cabinet.

2.6.1. Shall have minimum internal enclosure dimensions of 19 inches high, 14 inches wide and 5 inches deep.

2.6.2. Shall have a meter socket enclosure cover on the exterior of the cabinet that is easily removed without opening any doors on the cabinet. When this cover is removed it will allow the meter to be easily installed or removed from the meter socket.

2.6.2.1. Shall have a meter socket enclosure cover which has provisions for a utility company to install a meter seal. The meter seal would have to be removed to gain access to the meter socket.

2.6.2.2. Shall have a 3/8 inch hole to support a shackle lock.

2.6.2.3. Shall be a “Ring-less” type cover constructed of aluminum material with an extruded opening.

2.6.3. Shall have a meter mounting height in a range from 4 feet to 5 feet. This measurement is from the bottom of the cabinet to the center of the meter socket.

2.6.4. Shall allow wire routing from the utility service conduit thru the line side wire way into the meter socket that does not require bending of the service wire.

2.6.5. Shall allow the installed meter to extend beyond the outer edge of back wall of the cabinet.

2.7. Shall have a removable internal panel on the load side front of the cabinet for mounting all of the electrical components required in the cabinet.

2.8. Shall have external shell, doors and dead front doors fabricated from minimum 0.125 inch aluminum. The 0.125 inch thick aluminum shall conform to the requirements of ASTM B 209 for 5052-H32 aluminum sheet.
2.9. Shall exhibit good workmanship and good aesthetic appearance.

2.10. Shall have all exterior seams for both the cabinet and door(s) continuously welded. All exterior welds shall be ground smooth and all sharp edges removed.

2.11. Shall have an anodized finish. Anodized finish applies to the dead front door, load side wire way cover and the meter socket cover.

After fabrication the aluminum surfaces must have anodic coating as per MIL-A-8625C for Type II, Class I Coating except:
- The outer surface coating is 0.018 mm (0.0007 in);
- The coating weighs 27 mg per 645 mm²;
- The coating is sealed by immersion in a 100 degrees°C aqueous 5 percent nickel acetate solution for 15 minutes.

Before applying the anodic coating, the aluminum shall be:
- Etched with inhibited alkaline cleaner at 70 degrees C for 5 minutes;
- Rinsed with cold water;
- Immersed in a 50 percent (by volume) nitric acid solution for 2 minutes at 20 degrees C;
- Rinsed with cold water.

2.12. Shall have all external hardware, including all nuts and bolts for the cabinet enclosure, constructed of stainless steel. For door hinge requirements see section 2.27.

2.13. Shall have all internal hardware constructed of zinc plated steel.

2.14. Shall have bottom flanges with four 1 inch by 2 inch slotted holes for mounting the cabinet to anchor rods. The bottom flange with slotted holes shall meet the following requirements:

2.14.1. Shall be reinforced on the top side of the flange with a second piece of 0.125 inch aluminum at least 6 inches long and same width as the mounting flange that is welded in place.

2.14.2. Shall be capable of being secured to a concrete foundation by four (4) anchor rods and nuts on a 17 inch wide by 17 inch deep rectangular anchor rod pattern, measured from anchor rod centers.

2.15. Shall have four (4) anchor rods, nuts, and washers provided with each Rural Lighting and Flasher (RLF) cabinet. The anchor rods, nuts, and washers shall meet the following requirements:

2.15.1. Shall have anchor rods and nuts in accordance with the provisions of Mn/DOT 3385 for Type A Anchor Rods.

2.15.2. Shall have anchor bolts die stamped AB36. Blue top bolt identification is not acceptable.

2.15.3. Shall be nominal .75 inch diameter by 19 inches +/- 0.50 long with a 2.00 +/- 0.50 inch Ell on one end, and the other end shall be threaded a minimum of 4 inches.

2.15.4. Shall be galvanized full length in accordance with the provisions of Mn/DOT 3392.

2.15.5. Shall have stainless steel washers which have a 2 inch outside diameter (O.D.).
2.16. Shall have a bottom gasket that consists of:

2.16.1. Four (4) strips, sized to fit base.

2.16.2. Include corner hole/slots to accommodate the 0.75 inch anchor rods.

2.16.3. Gasket material 0.5 inch thick solid butyl rubber or 60 durometer commercial grade EPDM rubber.

2.16.4. Provide 0.25 inch gap for water drainage. The gasket assembly must be constructed such that when laid out prior to the cabinet installation there is a 0.25 inch gap in the bottom gasket assembly to allow for potential water drainage from the inside of the cabinet.

2.17. Shall provide a line side utility wire way in the bottom back side of the cabinet. It shall be 14 inches wide by 5 inches deep at the base of the cabinet for line side conductors. The cabinet base mounting flange may not be included in the 14 inch by 5 inch dimension. This separate wire way must extend from the base of the cabinet to the entry point of the meter socket area.

2.18. Shall provide a load side wire way. This Wire way shall provide a separate adequately sized signal flasher and lighting load power conductor path from the top of the cabinet’s load center to the bottom of the cabinet. The load side wire way must accommodate a minimum of the following conductor sizes:

- 12 (twelve) 3 conductor #14 AWG cable assemblies.
- 6 (six) 4 conductor # 4 AWG cable assemblies.

2.19. Shall have an anodized aluminum barrier between the line and load power wire ways.

2.19.1. Shall extend to within 1 inch above the bottom of the cabinet.

2.20. Shall have all sharp edges in any wire way covered to prevent damage to conductor insulation.

2.21. Shall ensure that adequate clearance is maintained for conductors entering or exiting the cabinet. When the enclosure is fully equipped conduits extending up through the concrete equipment pad foundation shall not come in contact with the cabinet enclosure. A 6 inch clear zone from the top of the concrete foundation to the lowest cabinet member must be maintained in the bottom of the cabinet to allow for conductor routing. The exception to this requirement is the wire way barriers which may extend to within 1 inch of the bottom of the cabinet.

2.22. Shall provide the required wire routing bend radius space as defined by the National Electrical Code Article (300.34).

2.23. Shall have cabinet lifting provisions that meet UL requirements for a NEMA 3R cabinet. The lifting provisions shall consist of aluminum lifting ears mounted such that they extend above the top of the left and right sides of the cabinet enclosure, allowing a bar or hooks to be inserted through both ears for lifting the cabinet. The lifting ears shall be secured to the cabinet by means of stainless steel carriage bolts and locking nuts, allowing the ears to be inverted to conserve space during shipping and storage. Access to the mounting bolts shall not be restricted by the positioning of items mounted inside the cabinet. The lifting ears shall be attached to the side walls of the cabinet.
2.24. Shall have two circular windows for the photocell at the right upper front corner of the cabinet that meet the following requirements:

2.24.1. One window shall be on the front door of the cabinet and the other shall be on the right wall of the cabinet near the front door.

2.24.2. Shall be mounted in such a manner that none of the wiring is exposed when the dead front door is closed.

2.24.3. The windows shall have a diameter of 3.5 inches.

2.24.4. The windows shall be of 0.125 inch thick Lexan and be installed in a manner that does not sacrifice the weather-tightness or the security of the cabinet.

2.25. Shall provide a hinged anodized aluminum dead front door to protect against accidental contact with live electrical parts.

2.25.1. Shall have no components or switches mounted directly to the dead front door.

2.25.2. Shall have cutout provisions for breakers, luminaire control/test by-pass switch and the National Electrical Manufacturers Association (NEMA) flasher.

2.25.3. Shall open without requiring removal of the NEMA flasher unit.

2.25.4. Shall open to the right.

2.25.5. Shall be hinged on the right.

2.25.6. Shall have 2 (two) ¼ turn latches on the left side to secure the door in the closed position.

2.25.7. Shall be labeled with the functions of all switches, breakers and devices that protrude thru the dead front door.

2.25.8. Shall have a see thru covered opening to allow viewing of the transient suppression status indicator.

2.25.9. Shall have the following white background label installed with ¼ inch tall black font:

PLACE MnDOT REQUIRED AVAILABLE FAULT CURRENT CALCULATION LABEL BELOW

2.25.9.1. Shall be located on the outside upper half of the dead front door.

2.25.9.2. Shall have a 6 inch by 6 inch blank area below the label reserved for the contractor’s available fault current calculation label to be added by others.

2.26. Shall have a front door opening gasket sealing flange around the entire opening of the exterior door. All four sides of the external cabinet door opening shall have a formed double flange. See Attachment A
2.27. Shall have a front door that meets the following requirements:

2.27.1. Shall have a folded door edge on all four sides of the exterior cabinet doors. This edge shall be deep enough to cover the formed double flange around the door opening. The seams on all four corners of the door shall be welded.

See Attachment B

2.27.2. Shall have horizontal louvers near the bottom of the full size external door to provide cabinet ventilation.

2.27.3. Shall have the door louvers backed by screen to prevent insect intrusion.

2.27.4. Shall allow easy access for all equipment installed in the cabinet.

2.27.5. Shall open to the right.

2.27.6. Shall have the bottom of the front door a minimum of 9 inches from the base of the cabinet.

2.27.7. Shall be secured by meeting the following requirements:

2.27.7.1. Shall have a three point locking mechanism which operates from a single easy turning handle. The upper and lower locking points of the three point locking mechanism shall each have a pair of nylon rollers.

2.27.7.2. Shall have a handle that is constructed from Aluminum or Stainless Steel. This handle shall be a minimum of (.625 inch) diameter or (.5 inch) square.

2.27.7.3. Shall have a handle that has provisions for pad locking. The pad locking provision is required so the cabinet is in compliance with Occupational Safety & Health Administration (OSHA) Standard 1910.147 The control of hazardous energy (lockout/tagout).

2.27.7.4. Shall have a handle which opens the door with a clockwise turning motion. This motion shall not interfere with the key for the lock, or any other enclosure mechanism.

2.27.7.5. Shall have a door lock that does not interfere with the rotation of the door handle. This lock shall be a standard police lock and key. The lock must work with existing police keys having a 1.75 inch long shank.

2.27.7.6. Shall have two keys provided with each cabinet.

2.27.7.7. Shall have a lock that is designed to prevent the latch from being pushed or pried back from the outside to gain unauthorized entry.
2.27.8. Shall have a lock access hole that has an aluminum swing away cover to prevent entry of rain and snow. The swing away cover shall completely cover the access hole with a minimum of .125 inch overlay on all sides of the opening.

2.27.9. Shall have an external door which is attached to the enclosure with lift off hinges.

2.27.9.1. Shall be constructed of stainless steel or other non-corroding material.

2.27.9.2. Shall be fastened to the door and cabinet with stainless steel bolts.

2.27.9.2.1. If the bolts are accessible from the exterior of the cabinet the bolts must be tamper proof.

2.27.9.3. Shall have a minimum of 3 (three) hinges.

2.27.10. Shall have door openings provided with an outdoor rated NRTL listed neoprene gasket to form a complete seal with the enclosure.

2.28. Shall have a rain tight vent assembly at the top of the cabinet to provide ventilation.

2.28.1. Shall be baffled to resist the entrance of water into the cabinet.

2.28.2. Shall provide drainage to the exterior of the cabinet for any water entering the vent.

2.28.3. Shall be designed to prevent insect intrusion.
3. CABINET ELECTRICAL COMPONENTS AND WIRING

3.1. Shall have copper conductors only. Aluminum conductors are unacceptable.

3.2. Shall have sufficient slack in all conductors in the cabinet to allow for expansion and contraction of the conductors.

3.3. Shall not have any butt spliced conductors.

3.4. Shall provide an enclosed photoelectric control (see PHOTOELECTRIC CONTROL section 5).

3.5. Shall have a NEMA flasher that meets the following requirements.

   3.5.1. Shall be in compliance with NEMA Standards Publication TS 2-2003 v02.06 section 6.3 Solid State Flashers.

   3.5.2. Shall protrude thru the dead front door.

      3.5.2.1. Shall not require opening the dead front door for replacement.

      3.5.2.2. Shall not interfere with dead front door operation.

      3.5.2.3. Shall not interfere with the main door operation.

   3.5.3. Shall have a support bracket or shelf that supports the entire bottom of the flasher when it is inserted in the flasher socket.

   3.5.4. Shall be an Eberle Design Inc (EDI) Model 810 Flasher, RENO A & E Model FL 200 (or MN/DOT approved equal).

       http://www.editrafﬁc.com/home.html


       http://www.renoae.com/traffic/index.php?option=com_frontpage&Itemid=1

3.6. Shall have a 6 pin Jones socket attached to the removable back panel which is located on the interior of the load side of the cabinet.

3.6.1. Shall be wired as follows:

- Pin 7  Load Circuit #1
- Pin 8  Load Circuit #2
- Pin 9  Earth Ground
- Pin 10  AC Neutral
- Pin 11  120 VAC Line
- Pin 12  No Connection.

3.6.2. Shall have wire connections soldered.

3.6.3. Shall have sufficient slack in the wiring harness to allow easy field replacement.

3.6.4. Shall be a Jones type socket, Cinch # S-2406H-SB or (MN/DOT approved equal).

http://www.cinch.com/index.cinch

3.7. Shall provide flasher output fuse termination for the intersection flasher as follows.

3.7.1. Shall provide 4 fused output termination blocks. Two blocks for each load circuit of the NEMA flasher.

3.7.2. Shall be behind the dead front door.

3.7.3. Shall be one of the following termination blocks.

- Weidmuller SAKS 6 KrG, (0531820000)
- Conta-Connect SK 1/32 KRG LED (1096.6)
- Phoenix Contact UK 10-DREHSILA 250 (6,3X32) (3005662)

3.7.3.1. Shall have factory supplied jumpers.

3.7.3.2. Shall have end caps.

3.7.3.3. Shall have rail holding device on both ends of the string of blocks.

3.7.3.4. Shall have factory numbering labels on both the top and bottom of the block.

3.7.3.5. Shall be uniquely labeled 1,2,3,4.

3.7.3.6. Shall have 7 Amp 240 volt fast acting fuses installed.

3.7.4. Shall have termination blocks 1 & 2 wired to load circuit 1 of the flasher.

3.7.5. Shall have termination blocks 3 & 4 wired to load circuit 2 of the flasher.
3.7.6. Shall be labeled on the mounting panel below the termination blocks 1 & 2 Flash Circuit 1

3.7.7. Shall be labeled on the mounting panel below the termination blocks 3 & 4 Flash Circuit 2

3.7.8. Shall have a label in the area of the output fuse termination blocks that reads as follows:

Replace with 7 Amp 240 Volt Fast Acting Fuse
Copper Conductors Only
Field Wiring Must be Rated at 90 Degrees C

3.7.8.1. The label shall be constructed of a material that will not deteriorate due to moisture or age.

3.8. Shall provide 10 point ground bus cu/al rating and all positions of the bus shall accommodate #14 thru #2 stranded or solid conductors. See section 4.10

3.9. Shall provide a 10 point Neutral bus cu/al rating and all positions of the bus shall accommodate #14 thru #2 stranded or solid conductors. See section 4.11.

3.10. Shall have a lighting contactor with the following requirements.

3.10.1. Shall be 4-pole.

3.10.2. Shall be rated for 30 Amps.

3.10.3. Shall be rated for 120/240 VAC

3.10.4. Shall be normally open.

3.10.5. Electrically held.

3.10.6. Shall be open type.

3.10.7. Shall be rated for tungsten filament and ballast loads.

3.10.8. Shall have an operating coil rated at 120VAC.

3.10.9. This contactor must contain a label that clearly states the contactor is series rated for 22,000 AIR.

3.10.10. Shall be wired to the load side of the luminaire breakers.

3.10.11. Shall be capable of accommodating #4 AWG wires. This requirement can be meet by adding a terminal block that accommodates #4 AWG wire.

3.11. All wiring shall be a minimum of #14 AWG, THHN, or THWN unless otherwise specified. The service conductors shall be #2 AWG, THHN, or THWN.
4. ELECTRICAL SERVICE EQUIPMENT

4.1. Shall have 200 AMP, 600 volt, 3 wire meter socket with a lever actuated positive bypass mechanism.
   4.1.1. Shall have the neutral connection for the meter at the 9 o clock position.
   4.1.2. Shall be a Milbank U4801-XL-5T9, Landis + Gyr 40405-02CO, 
           (or approved by MN/DOT and the local power utilities)
           http://www.milbankmfg.com/

4.2. Shall have the following 120/240 VAC 60 Hz load center circuit breakers:

   4.2.1. Shall be thermo-magnetic.

   4.2.2. Shall be full size breakers. No half high, dual or tandem circuit breakers are acceptable.

   4.2.3. Shall have all circuit breakers that carry a minimum 22,000AIR (Ampere Interrupting Rating).

   4.2.4. Shall continuously supply 80% of maximum rated current at 40 degrees C.

   4.2.5. One, 2 pole 100 AMP labeled (Main)
           4.2.5.1. The circuit breaker shall be rated for 100 Amps.

   4.2.6. One, 1 pole 15 AMP labeled (Photocell Control)
           4.2.6.1. The circuit breaker shall be rated for 15 Amps.

   4.2.7. One, 2 pole 20 AMP labeled (TVSS)
           4.2.7.1. The circuit breaker shall be rated for 20 Amps.
           4.2.7.2. Shall be connected to the load side of the main circuit breaker.

   4.2.8. One, 1 pole 15 AMP labeled (Flasher)
           4.2.8.1. The circuit breaker shall be rated for 15 Amps.

   4.2.9. Two, 2 pole 20 AMP labeled (Luminaire 1 and 2).
           4.2.9.1. The circuit breaker shall be rated for 20 Amps.

   4.2.10. One, 1 pole 20 AMP labeled (Convenience Receptacle)
           4.2.10.1. The circuit breaker shall be rated for 20 Amps.
4.2.11. One, 1 pole 30 AMP (Labeled Signal Service)

4.2.11.1. The circuit breaker shall be rated for 30 Amps.

4.2.11.2. This circuit breaker is an optional feature that is only required when a project specifically calls for this circuit breaker to be added to the cabinet.

4.3. Shall have two knock out locations for one additional two pole branch circuit breaker to be added in the future.

4.4. Shall have machine printed labels that are water proof and smudge proof and rated for outdoor use. Silk–Screening of the panels would be acceptable.

4.5. All circuit breaker loads shall be labeled with on and off positions, and identified with the load which it is carrying (e.g. “Flasher” or “Luminaire Numbers” or “Photo Control”). All circuit breakers shall be clearly labeled in a manner that will not deteriorate due to moisture or age.

4.6. Shall have tin or silver plated copper bus bars rated for both copper and aluminum conductors.

4.7. Shall have separate neutral and ground buses which are exclusive for source of power connections and internal cabinet wiring.

4.8. Shall have provisions for proper grounding of the neutral bus to a ground rod located within the area of the enclosure.

4.8.1. Shall have the means to change the cabinet configuration so that the neutral and the grounding connections can be isolated for cases when the cabinet is fed from feeder conductors rather than service conductors.

4.9. The ground rod conductor shall always be connected to the ground bus. A green insulated bonding jumper shall be run from the ground bus to the neutral bus.

4.10. Shall have provisions for attachment of 10 field neutral conductors near the bottom of the load side wire way in the area of the output termination blocks. These bus bars are in addition to those required in section 4.7.

4.10.1. Shall have tin or silver plated copper bus bars rated for both copper and aluminum conductors.

4.10.2. These terminals shall accommodate #14 thru #2 stranded or solid conductors in each position of the bus.

4.11. Shall have provisions for attachment of 10 field grounding conductors near the bottom of the load side wire way in the area of the output termination blocks. These bus bars are in addition to those required in section 4.8.

4.11.1. These terminals shall all accommodate #14 thru #2 stranded or solid conductors in each position of the bus.
4.12. Shall have appropriate separation of service entrance conductors from non-service conductors.

4.13. The cabinet shall have an overall rating of 22,000 AIR.

4.13.1. Shall be labeled in accordance with article 110.22 of the NEC.

4.13.1.1. The label should read as follows:

**CAUTION - SERIES COMBINATION SYSTEM RATED 22,000 AMPERES. IDENTIFIED REPLACEMENT COMPONENTS REQUIRED**

4.13.1.2. The label shall be constructed of a material that will not deteriorate due to moisture or age.


Each external cabinet door, external removable cover and dead front door shall be labeled with the following:

**Warning**
**Potential Arc Flash Hazard**
**PPE Required**

4.14.1. The label shall be constructed of a material that will not deteriorate due to moisture or age.

5. **TRANSIENT VOLTAGE SURGE SUPPRESSION**

5.1. A transient Voltage Surge Suppressor shall be located in the cabinet behind the dead front door.

5.1.1. The suppressor shall be listed by a Nationally Recognized Testing Laboratory (NRTL) as being compliant with UL 1449 Third Edition.

5.1.2. The suppressor shall be Advanced Protection Technologies Inc. SPDEE model number S50A120V2PN or (MnDOT approved equal).

5.1.3. The neutral input shall be connected directly to the neutral bus.

5.1.4. The ground connection shall be connected directly to the ground bus.

5.1.5. All connections shall be made using the 10AWG wire provided with the suppressor, no splices or terminations in these conductors will be acceptable. The wires for these connections shall be as short and straight as possible and they shall have no more than one bend with a radius of no less than 2 inches.

5.1.6. The suppressor shall be located and mounted so viewing of the status indications may be accomplished without removing any panels or covers. Viewing the status of the transient suppression status indicator will not require opening the dead front door.

5.1.7. Location of the suppressor in the cabinet shall facilitate easy replacement in the future.

5.2. Shall be wired to a dedicated two pole 20 amp circuit breaker labeled TVSS.
6. CONVENIENCE RECEPTACLE

6.1. Shall have a 120 VAC (RMS) convenience receptacle in accordance with the NEC Article 210.64.

6.2. Shall Be a Ground Fault Circuit Interrupter (GFCI) type.

6.3. Shall be a 20 Amp receptacle.

6.4. Shall be grounded.

6.5. Shall be accessible when the front exterior door is open and the dead front door is closed and latched.

6.6. Shall be mounted a minimum of 2 feet above the bottom of the cabinet.

6.7. Shall not be mounted to the dead front door.

6.8. Shall have a label on the dead front door that reads “Convenience Receptacle”

7. PHOTOELECTRIC CONTROL

7.1. Shall control AC power being delivered the lighting contactor control coil.

7.2. Shall provide a 3- pole, 3- wire locking type mounting receptacle for photoelectric control. This photocontrol receptacle must be in full compliance with ANSI C136.10 – 2006.

7.2.1. Shall be a rotatable photocell socket such that the photo sensing input of the photocell may be rotated to face either window.

7.2.2. Shall have all wiring running from the photocell socket in front of the dead front door enclosed in a raceway.

7.2.3. Shall be designed to provide adequate clearance to easily install or remove the photocell.

7.2.4. Shall have a base that is constructed of cast aluminum.

7.2.4.1. Shall be an Area Lighting Research Part # AM-2-A-NB or (MN/DOT approved equal).


7.3. Shall include a photoelectric control in accordance with the specification found on the Mn/DOT WEB site titled “Photo Cells”. Qualified photoelectric controls can be found on the Mn/DOT Approved Products List for Lighting:

http://www.dot.state.mn.us/products/index.html
7.4. Shall provide a 2-position test switch with "AUTO" and "TEST" positions to allow by-passing the photocell to turn roadway lights on for testing.

7.4.1. Shall have an Auto/Test Switch that is a heavy duty, single, double throw, two position rotary switch.

7.4.1.1. The test switch shall operate as follows:
   One switch position shall be labeled "AUTOMATIC" and the other switch position shall be labeled "TEST".
   In the "AUTOMATIC" position, the test switch shall connect the coil of the lighting contactor to the AC+ (SWITCHED) from the photoelectric control, providing photoelectric control of the lighting circuit.
   In the "TEST" position, the test switch shall connect the coil of the lighting contactor to the AC+ (UNSWITCHED) from the photoelectric control, providing power to the lighting circuit regardless of the state of the photoelectric control.

The test switch shall be Allen Bradley 800T-H2A, Schneider Electric 9001KS11BH13, Eaton 10250T1311 (or MN/ DOT approved equal)

7.4.2. Shall have the functions of the switch labeled on the dead front panel.

7.5. Shall have power to operate the photo control being fed from the 15 AMP (Photocell Control) circuit breaker to protect the photocell, test switch, and contactor coil circuit.

7.6. Shall be designed to provide adequate clearance to easily install or remove the photocell.

8. EXTERNAL LABELING

8.1. Only MN/DOT approved and required safety labels may be applied to the exterior of the cabinet.

8.2. The manufacturer may not apply a company logo or company name to the exterior of the cabinet.
9. CABINET DRAWING SUBMITTAL

9.1. The manufacture must provide individual detailed drawings of the cabinet and sub-assemblies prior to submitting the cabinet for approval.

9.1.1. The individual drawings shall include but will not be limited to the following:

9.1.1.1. Detailed dimensional drawings of the exterior of the cabinet.

9.1.1.2. Detailed dimensional drawings of all internal compartments and panels of the cabinet

9.1.1.3. Detailed drawings of all safety covers and locations if required.

9.1.1.4. Detailed drawing of where all safety and manufacturer labeling must be placed.

9.1.2. Any modifications to the drawings Mn/DOT deems necessary must be completed by the manufacturer and final drawings provided to the department and approved by Mn/DOT prior to the cabinet being placed on the Mn/DOT APL.

10. ALLIANT ENERGY APPROVAL

Once the cabinet has been placed on the MN/DOT approved products list the manufacturer must submit and get their product listed on the Alliant Energy’s APL at no cost to the Department. The manufacturer must obtain Alliant energy approval within one year of being placed on the MN/DOT APL. Failure to comply with this requirement will result in the listed product being removed from the MN/DOT Approved Products List.

Additional information regarding Alliant Energy’s Approved Products List (Electric Service Equipment) may be found by following the link below.

http://www.alliantenergy.com/index.htm

11. CABINET MODIFICATIONS

Once the cabinet has been accepted by MN/DOT as meeting the requirements of this specification and placed on the MN/DOT APL no substitution of materials or modification of the cabinet design will be allowed unless the manufacturer has received written permission from Mn/DOT allowing the substitution or change. Failure to comply with this requirement will result in the listed product being removed from the MN/DOT Approved Products List.
12. ATTACHMENTS

12.1. Door Opening Double Flange

Attachment A
12.2.  Folded Door Edge

Attachment B
12.4. Cabinet Drawing
Attachment D
Example Drawing For Reference Only

Cabinet Drawing
Attachment D
Example Drawing For Reference Only

Example Drawing For Reference Only